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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI GARDENVALE, Que., January 4th, 1923 No. 1

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-:- EDITORIAL -:-

WE'RE OFF!

It is now 1923, although the idea is so new that we still write 1922 at times. Doubtless many of our readers have made good resolutions; so have we — to make the *Pulp and Paper Magazine* better this year than ever before.

"THE YEAR THAT'S AWA' "

(By the Editor of the "Journal of Commerce")

Writing on this subject at the commencement of the year that died on Sunday, we expressed the firm conviction that the worst, from an industrial and commercial viewpoint, was then definitely behind us, and that the country could look forward with confidence to a period of progressive betterment. Today we are able to look back on that expression of conviction with the satisfaction that is the due of those whose predictions have been confirmed by transpired events. Looking back on the year 1922, Canada has every reason to look back on the past twelve months with sentiments of gratitude and satisfaction.

First and foremost, we have every reason to be grateful for the bounteous harvest which a benign Providence has vouchsafed to us. A bumper wheat crop means, of course, plenty, in its most literal sense, of the universal food — plenty not only for ourselves, but also for our customers in other lands. As most of these latter live overseas this bumper crop means largely increased railroad activity and a much greater volume of business at Canadian terminal ports. But a crop of the dimensions of this year's means a good deal more than all this. It means that, all over the land, the wheels of commerce will turn the faster. It means an enhanced measure of general prosperity — a decrease in unemployment and more work at wages with a higher purchasing power.

As regards unemployment, indeed, we have a very solid and substantial reason for gratification in the change that has taken place in this situation in the past twelve months. This time, last year, the unemployment question was of serious dimensions. As we write, while unemployment cannot be said to be altogether non-existent — that condition in a country such as Canada, where so many activities are perforce of a seasonal character must always be difficult, if not, indeed, impossible, of attainment — its proportions are not such as to give cause for national concern at the moment. We hesitate to put the matter higher than that for fear of being misunderstood. For we are among those who feel that the presence of an unemployment problem in this country so favored by nature and so far from over-populated, is not due to any immutable decree of Providence. On the contrary we believe that its presence among us at all is an anomaly in a young and virile and vigorous land. But we recognize that the problem of unemployment is interwoven with that of immigration and that the one is never going to be solved, entirely and satisfactorily, apart from the other. In the successful handling of our immigration problem in the future is to be found the cure — the only complete and final cure — of the unemployment evil in Canada. However, although, in default of an adequately directed, controlled and coordinated immigration policy, this evil may, and will, again manifest itself among us in the future on a gravely disquieting scale, it has immensely diminished in the course of this year.

Moreover, during the past twelve months, the cost of living has again substantially declined. The dollar purchases quite a good bit more than it did this time last year. In 1921, the average cost of the family budget was $11.82 as against $10.28 today. We freely admit that it is still a far cry from even the last-named figure to the 1914 figure of $7.83, but it is happily, even a farther cry from the present-day figure to the 1920 monstrosity of $15.95.

Not the least significant evidence of the good recovery Canada has made from war and post-war maladies may be seen in the appreciation that has taken place in the Canadian dollar. About two years ago this was quoted at a discount of 19 per cent. Last week it was at a small premium.

The fishing, the timber and the mining industries—particularly, as regards the last-mentioned, in the matter of gold production — can all look back on a good year. The building trades have also been busy—busier, in fact, than for several years — although a resumption of activity in these might have occurred a good while previously, had organized Labor shown a reasonably accommodating disposition.

In the improved state of our export trade, too, there is cause for solid satisfaction. The adverse trade balance of 1921 has been converted into a favorable one of substantial proportions, and, among the exporting countries of the world, Canada now ranks fourth, and as a wheat exporting country first.

At practically every industrial centre in the country there is largely-increased activity discernible today as compared with conditions prevailing twelve months ago. Manufacturers and wholesalers who have made up their statements for the past year express themselves, very generally, as being satisfied with the result and, in some cases, quite unexpectedly so. One of the most encouraging signs of the industrial betterment that is now undoubtedly under weigh, is evinced by the decided improvement that is now taking place both in the size and in the volume of the orders that are being placed for machinery. This fact shows that manufacturers are convinced that the present season of betterment is to be no ephemeral condition, but is rather the prelude to a period of sustained and expanding industrial and commercial prosperity.

For our part, we believe this view to be correct. After the prolonged term of post-war depression of which we had experience, it was essential that prosperity, if it was to be sound and stable, should not be too sudden in its arrival. That has been the country's experience. Trade improvement has come steadily and surely, but relatively slowly. That is the sort of progress that expands and endures. How steady it has been and how large in the total will only be fully realized when actual figures of production are available. But, when they are, it will be seen that, in practically every phase of industrial and commercial activity, Canada has immensely improved her economic position.

ARTIFICIAL SILK

It is somewhat strange that, so far as we are aware, the artificial silk industry has yet to obtain a foothold in this country. Advices from New York state that the industry in question is making great progress there. In fact, manufacturers are endeavoring to increase production to satisfy the demand which is strengthening.

In Italy, four large factories at Pavia, Padua, Venaria Reale and Caesano Maderno, have a total daily output of 25,000 lbs. of artificial silk of the finest quality, and it is expected that the plants now in course of erection at Rome and Naples will raise the daily output to 54,000 lbs. in 1923. The present output does not cover the home demand which, like that in the Uited States, is strong, but nevertheless a considerable export trade has already been developed. At present, 420 million lire is invested in the manufacture of artificial silk in Italy—a capital which will be more than doubled this year when the 12,000 hands now employed in the industry will have been increased to 20,000.

We have more than once heard those qualified to judge express the opinion that a fortune awaits the enterprising firm which first undertakes the commercial production of artificial silk in this country. In lustre, one of the most highly esteemed characteristics of natural silk, the artificial silks exceed the natural fibre—indeed, with some of them the metallic lustre is almost excessive. In softness, some varieties of artificial silk are somewhat deficient, but this deficiency has been overcome by building up the thread from a large number of fine filaments, so that a thread of 40 denier may contain forty to eighty of such filaments. Such artificial silks are equal to natural silk in softness and covering power.

All the commercially produced artificial silks are obtained by using some form of cellulose as a basis. This substance, which forms the chemical basis of cotton, linen, wood and the structural portion of vegetable growth generally, is chemically very inert, and only a few ways of dissolving it are known. Among these, there are five, each of which forms the basis of a commercial process of manufacturing artificial silk. The original artificial silk is known as Collodion Silk and is produced from cellulose when the latter, having been converted into nitro-cellulose by treatment with nitric acid, becomes soluble in alcohol-ether. Bronnert Silk is made from a zinc chloride solution of cellulose. Pauly, Linkmayer and Thiele Silks are products of the Cuprammonium process of which the basis is the solution of cellulose in an ammoniacal solution of hydrated oxide of copper. Viscose Silk forms eighty-five per cent. of the world's artificial silk production. Finally, there is Acetate Silk of which the basis is the production of acetates of cellulose which are soluble in various solvents.

Early last year it was estimated that the total world's production of artificial silk was well over 10,000 tons a year, and since then it has been increasing with surprising rapidity.

MARRIED MEN LOSE MORE TIME THAN SINGLE FELLOWS

Why should the married man lose more time at work than the average single man in the same mill?

That is the question which is raised by figures for an Ohio paper mill, which has compiled detailed statistics for the entire employed personnel of the company, one of the biggest in that portion of the country.

The figures are those for the Mead Pulp and Paper Company of Chillicothe, O., but the American Paper and Pulp Association is endeavoring to ascertain whether this is the rule throughout the entire paper industry or not, by a questionnaire to the editors of all the employes' magazines published by paper mills in the United States.

Francis Pope of the employment department of the Chillicothe company is responsible for the compilation, which was for the entire year to the recent date of compilation.

Here are some of the figures he has developed, by dividing married and single men into age classes; on an average the married man lose more time because of sickness, permission and accident than do the single men of comparative ages. In only two groups do the single men show a heavier loss, these being single men under 30 years because of accidents, and single men between 41 and 50 because of sickness. The heaviest rate for sickness is for married men over 50 years, with married men from 31 to 40 years ranking second in percentage of absence. Single men over 50 ranked third. Those losing least time were the single men from 31 to 40, the next most healthy group being the married men between 41 and 50.

Married men were much more likely to take off by permission, while accidents seemed to be confined to the married men, with the exception of the youngest group of single men, those under 30, who had the highest accident rate of the entire mill.

There is no secret in the heart which our actions do not disclose. The most consummate hypocrite cannot at all times conceal the workings of the mind.

Pulp and Paper Mills at Port Arthur and Fort William

The Fort William Times Journal on December 16, 1922, printed a special number in honor of the pulp and paper industry at the head of the Lakes. The story is one that will interest readers of the Pulp and Paper Magazine and will be quoted, in part, in the following. Word has just come from Fort William that the first paper was run over the new news machines on the last day of the old year. Before long the production will be continuous at 160 tons per day of newsprint.

GROWTH OF THE LOCAL INDUSTRY

In Ontario is nearly half of the vast pulpwood wealth of Canada.

In that portion of this queen province, directly or indirectly tributary to Fort William and Port Arthur, is more than half of Ontario's share of this source of vast wealth.

The preliminary stage may be said to have passed when the first roll of ready-to-use newsprint leaves the mill of the Fort William.

This district became an important source of pulpwood supply more than ten years ago and more than this district's share of pulpwood in the raw material stage has been exported. It had to be cut largely from patented lands and it had to be exported because there was no other market. A goodly portion of the output did go, however, to Ontario mills, for conversion into the finished product.

Enormous Investment Here

Approximately $7,300,000 have been invested in pulp and paper plants in the area directly tributary to Fort William and Port Arthur in the last four years, beginning with the $1,250,000 plant of Port Arthur Pulp Mills Company Limited, which later became a unit of the Provincial Paper Company Limited, under which a paper mill representing an investment of $1,000,000 is now in course of erection and fabrication.

Other Districts Plants

Then came the Kaministiquia Paper Company Limited, which failing to prosper was purchased last winter by Wisconsin interests and is now operating under the name of the Thunder Bay Paper Company, Limited.

The original plant represented an investment of $350,000. The investment and the capacity of the plant is in course of being doubled.

Near Nipigon is a $700,000 plant with a capacity of 70 tons of pulp daily, which is not operating. The Company is known as the Nipigon Fibre and Power Company Limited. It is in course of a reorganization, which may result in it being taken over and operated by one of the big outfits.

Greatest Plant on Mission

The biggest and most important plant of the immediate district is of course that of the Fort William Paper Company Limited, on the Mission. The initial investment of $1,500,000 in a pulp mill was made just before peak prices were reached, just as it began operations the bottom dropped out of the pulp and paper market.

The company had a large stock of pulpwood purchased locally at peak prices. It had to make pulp out of this wood and sell it for about 50 per cent of what the price of pulp had been when the wood was purchased. The cleaning up of that stock of wood involved a financial strain that would have certainly discouraged any company which did not possess unbounded faith in the industry. The story of astuteness of the financial men of the company in their successful fight to pull the company through that crisis would make a volume of romance in itself.

Keeps Faith With City

But pull through the company did. It kept both the letter and the spirit of its agreement with the city of Fort William. It has been in continuous capacity operation since the day the wheels first turned and it began operations in a time of wide-spread labor unrest. The company right now is completing the most modern paper mill on the continent at a cost of $2,500,000 which will bring the company's stake in the community of Fort William up to $4,000,000.

1,000 Employed in City

The plants already in operation give employment, regular employment, to over 1,000 men in the city of Fort William and Port Arthur and this number will be considerably augmented when the paper mills now in course of construction are put in operation.

Existing mills here will produce 305 tons of pulp each and every 24 hours. The paper mills which will be in operation soon will produce 165 tons of paper each and every 24 hours. The pulp is worth approximately $40 a ton and the paper will be worth about $80 a ton, giving the two cities a permanent industrial income of over $25,000 daily average which is the high mark in their history. This is all exclusive of the earnings of the men in the woods, most of whom make these cities their headquarters and spend a considerable portion of their earnings in them.

And all of the foregoing is only the beginning.

There are several actual prospects and one of them may announce definite plans before the paper for which this is written goes to press.

When this company enters the field it will be next best to the Fort William Paper Company Limited. Its initial investment will be about $3,500,000 preliminary to the operation of a cresote plant, a saw mill and a paper mill. The company holds one of the important timber limits of the district and has held it for some time.

Fort William and Port Arthur not only have a tremendous quantity of raw material in the district tributary to them and plants for the production of the ready-to-use articles but in Port Arthur there is a plant equipped to make most any piece of machinery which may be used in any of them.

Make Mill Machinery Here

The Port Arthur Ship Building Company Limited, has a plant which with its equipment represents an investment of $3,500,000 and a not inconsiderable part of this investment is for patterns and devices for the production of pulp making equipment. It has been found that much of the machinery used in building a ship can be made equally useful in other lines of production.

During the decade which closed about the time the cities made dots on the pulp and paper map of Canada the two cities had essayed several lines of industry with varied results.

Operation in most of them was and is more or less irregular. The rules seemed to provide feasts or famines. There was either too much work or there was none, extravagant wages or nothing. Orders were large and quick delivery insisted upon or there were no orders.

The paper market very much resembles the water market. People must have water every day. Every day a slightly increased amount is used. Consumption keeps pace with population. It is not up one day and down the next. The same thing applies to paper. Humans might live without paper but they do not want to live without it. They use a tremendous amount every day. They will use more as population increases.

There is just one difference in the two markets. There seems to be plenty of water most everywhere and the supply does not seem to be diminishing. It does not have to be made. It just is or it is not.

But paper has to be made to provide for a stipendous daily consumption. It has to be made from a raw material which for all practical purposes is approaching exhaustion in one of the important markets of the world. The exhaustion is said to be due to a long permitted policy of exploitation instead of development. These cities and their tributary district are practically on the doorstep of this depleted market. It has a supply of raw material which would keep many such plants as are mentioned in the foregoing in operation for a life-time or longer. If a proper policy of reforestration is enforced there will be new crops coming on before the now ready supply is half exhausted. It takes from 30 to 60 years for nature to produce a good pulpwood forest. Nature however refuses to take on the job unless given a chance. In fact nature needs assistance instead of reckless and careless opposition. Forests do not grow readily from ground covered by debris left by cutters who have only to do with harvesting an existing crop. Nature never can produce a 30 year old tree if someone carelessly sets a fire going every few years. Neither can a crop be harvested after it is ripe if fire is permitted to ravish it.

(To be continued)

TREND OF PRINTING SALES AND PAPER PURCHASES IN THE UNITED STATES

Observations by the Field Representatives of the Department of General Service, the Index Data Sheet compiled by the Department of Research of the United Typothetae of America and statistics from printers and paper merchants throughout the country indicate present conditions in the printing industry as very "healthy," according to the latest bulletin of the American Writing Paper Co.

While business in local communities may appear "spotty," the industry as a whole is active with every indication of gradual and steady improvement

Printing sales for the month of October show a continuation of the upward trend which started in July, 1921, and represent a substantial increase over October of last year.

The rate of increase is, however, slowing down a bit. The tonnage of Paper purchases remains the same for the month of October as the month of September, whereas the value of the paper purchases shows a slight falling off. This difference between the value and tonnage is due to the general increase in the price of paper which took place during the month of October.

Examination of the chart for the previous four years shows that there is usually a slight decrease in the volume of printing sales during the month of November, the abnormal years of 1918 and 19 being the only exceptions. It is to be expected, therefore, that the next chart will show a temporary decrease or at least a temporary halting of the upward movement of this curve.

The volume of magazine advertising has fallen off during November in previous years and this year has been no exception to this general rule.

As pointed out in previous charts, however, the upward trend may be expected to continue for a number of months to come, with possibly temporary halts. This contention is favorably supported by recent developments reflecting directly the increase in business, such as figures on car loadings representing physical commodities going to market, and bank clearings outside New York which indicates roughly the value involved in business transactions. Car loadings are near the record figures of 1920, while outside banks clearing showed in October more than the usual seasonal expansion.

Most prices have been firm or have advanced. During the latter part of October and up until the middle of November Dun's has averaged twice as many price advances as price declines, while Bradstreet's price index showed an exceptional advance of 7 percent in October. This is the largest increase since the advance began in July of 1921.

TO TEACH PAPER MAKING

(From the Paper Trade Journal)

The Institute of Industrial and Domestic Arts, Gardenvale, P.Q., has just issued a handsome syllabus of its correspondence courses in the Department of Pulp and Paper Making. The courses outlined include elementary science, mechanical pulp, sulphite pulp, sulphate and soda pulp, beating and coloring, paper machine operation and paper finishing. Instruction in these courses is given under the authority of the Canadian Pulp and Paper Association, the committee for the supervision of correspondence education consisting of F. J. Campbell, manager of the Canada Paper Company, Limited; O. F. Bryant, and George Carruthers, president of the Interlake Tissue Mills, Limited

The faculty is drawn from some of the most representative men in their lines in the industry, of the United States and Canada. All of them had much practical experience and hold responsible positions in the business. There has been need for an institution of this kind in the industry for a long time, and the assertion may safe be ventured that the Department of Pulp and Paper Making of the Institute of Industrial and Domestic Arts will meet this need in every respect as perfectly as it is humanly possible to do. The PAPER TRADE JOURNAL takes great pleasure in recommending it unhesitatingly to the many young men in the industry, who cannot fail to profit from its instruction.

Room for Millions of Settlers

(From the Journal of Commerce)

An effort is now being energetically made by the numerous railway and steamship companies, to have some sort of encouragement given to bigger immigration to Canada. While the efforts of the transportation companies cannot be looked upon as wholly unselfish, since it is evident they are anxious to fill the second and third class portions of their carrying vehicles, both trains and steamers. Nevertheless the efforts being put forth are in the right direction.

Numerous schemes have been suggested and some very good immigration has been put through by the Salvation Army, and several co-operative settlement schemes have been started with some success. The last census showed that Canada still has a population of considerably less than 10,000,000 people, and this in face of area larger than that of the United States, which country has a population of around 110,000,000.

It has been argued, and very sanely, that if the United States can provide and take care of a population of 110,000,000, it ought to be equally possible for Canada to take care of a population of at least 25,000,000 to 35,000,000. The immigration to Canada was of course hampered during the war, which meant that for a period of approximately 5 years, the immigration was far from normal. Had the immigration during that five year period been as good as the previous five year period, Canada would have today a population of at least 10,000,000.

It has been said that there is a big inquiry in the Old Country from farmers and workers of a very fine type, regarding the possibility of locating in Canada. In former days the immigration was largely of such nationalities as Austrian, Greek, Serbian, Italian, etc. who were job-seekers and who to some extent might, if allowed to come in too great numbers, create an industrial crisis because of unemployment. Canada does not at the present time need many men of this type.

But there are thousands of families in the Old Country, staunch and industrious British and Scotch, who are anxious to come to Canada and enter agricultural pursuits and establish industries of their own. Such immigration would, of course, be of great value to the Dominion.

That at the present time the labor market of Canada would, with any kind of a boom, show a scarcity of men, was demonstrated in the recent harvesting of the crops in the prairie provinces, when it was extremety difficult to get sufficient men for the work. There has also been some difficulty in getting sufficient laborers for the mining and logging industries of the east and the west.

It must be remembered further that other countries, including South America and Australia, are rivals to Canada for immigrants, and even South America has been making a bid for new immigration. There are inducements in all these countries quite as attractive as the inducements offered by Canada. The realization of this, has made it urgent that some definite plan of encouraging immigration be brought into effect by the numerous industrial interests and the governments combined.

Immigration to the United States has been limited by stringent regulations and many European families who might have gone to the United States are looking toward Canada. The Dominion of Canada has an advantage over South America and Australia, in its proximity to the Old Country and to the European markets. Only 5 days from Montreal to Liverpool looks attractive to the Old Country settler when he compares this distance with a country that may be from 30 to 60 days from the old land.

The proximity of Canada to the European markets, also makes the production of every kind in Canada attractive, because the European markets are recognized as the most attractive in the world. Moreover the inauguration of fast freight services has brought the Oriental markets of Japan and China within 10 to 12 days of the Pacific ports. Already the grain movement of the prairie provinces is finding its way to China and Japan via Vancouver, Victoria and Prince Rupert.

The producer in Canada whether he be engaged in mining, lumbering, agriculture or the numerous other industries, has an available market either east to the Atlantic coast and to Europe, or west to the Pacific Coast and to the Orient. In either direction he is only a couple of weeks from big markets. This is an important consideration and one that attracts the Old Country settler as he takes down a map of the world and studies the locations of the countries to which he might emigrate.

Sir Lomer Gouin, speaking recently before the Montreal Womens Liberal Club said: "If there are not twelve or thirteen millions of people in Canada ten years from now, the electorate of this country will have reason to change its Government." This means that Canada's population will have to increase at the very least 500,000 per year, and this can only be done through immigration.

For the fiscal year 1919 the immigration was 57,000, and in 1920 and 1921 it was less than 100,000. In 1914 the year before the war had got well started, the immigration was 384,000 and had this been maintained and there had been no war, Canada would have at least another 1,000,000 inhabitants now.

The density of population in Canada is less than 2 per square mile. In the 1911 census it was 1.93 and the small increase in the 1921 census makes the density still around 2. The following table gives a good indication of how small a population Canada has in proportion to its area and in comparison with other countries.

Country	Area Sq. Miles	Population
Canada	3,603,000	8,500,000
France	207,000	40,000,000
China	4,300,000	400,000,000
Japan	140,200	75,500,000

The United States, with an land area no larger than Canada's, has a population more than ten times the Canadian population and it will be noted in the above table that Japan with an area of only 140,000 square miles has a population seven times as large as Canada. It is, of course, realized that the entire old countries such as all the European countries, China and Japan have practically reached their limit as regards population density, and it is because of this that the newer countries including Canada, South America and

Australia are looked upon as the future homes of immigrants from the old world.

The total area of the United States is 1,913,269,000, acres, while that of Canada is 2,397,000,000 acres, but the cultivated area of the U. S. is 293,000,000 acres, while that of Canada is approximately 60,000,000 acres. With an area nearly double of that of the United States, Canada's cultivated lands are about one fifth the cultivated area of the U. S.

Statistics like these prove how incomplete has been the development of Canada and notwithstanding the big increases in the value of all production, our totals are small indeed when compared with the statistics of our southern neighbour. In the Argentine the cultivated areas have increased more rapidly in proportion to population than in Canada and the increase in the Argentine and in all South America has been largely due to the immigration of Old Country people, mostly agriculturists.

From 1901 to 1911 the population of Canada increased 1,835,000, which was a yearly average of 183,000. In the next ten-year period, from 1911 to 1921 the increase was approximately 1,225,000 or a yearly average of approximately 122,000. It is of course remembered that five years of this period all immigration was stopped on account of the war, but to get back to even the pre-war immigration rate, Canada should have an annual immigration of over 250,000, to make up for the 60,000 yearly loss for the war period.

Practically every province in Canada has attractive openings for agricultural settlers. There are still thousands of acres of uncultivated farms in the Maritime Provinces and in Quebec and Ontario, and there are also many thousand acres of abandoned farms in all the provinces. In the Maritime Provinces, Quebec and Ontario there is a big opportunity for increased mixed farming, dairying and fruit growing and similar opportunities are offered in British Columbia.

There are still millions of acres in the three prairie provinces fairly close to the railways which are available for mixed farming, large live stock ranches, dairy farms and grain growing. The Canadian prairies are recognized as second to none in the entire world in the production of big wheat crops and for the foddering of huge herds of live stock. There has been opened up recently the large areas in the Peace River country, where the winters are milder than many other portions of the prairie country. The similarity of climate in the Maritime Provinces and in British Columbia to the Old Country, will always make these provinces more or less attractive to the Scotch and English immigrants.

As regards rural and urban population, Canada has been called one of the most sensibly populated countries in the world. In practically every census there has been an excess of rural over urban population and at the present time the population is about evenly divided between the urban and the rural centres. Canada has not a surplus of big cities, the four largest being Montreal with approximately 1,000,000, Toronto with close to 650,000, Winnipeg with approximately 300,000 and Vancouver 200,000. There are only a half a dozen other cities with populations exceeding 100,000. When it is remembered that the population of New York city or London is practically as great as the entire population of Canada, it can be seen how sensibly the Canadian urban and rural settlement has been maintained. There are a large number of cities in the United States with a population exceeding any one of the entire Canadian provinces, west of Ontario and east of Quebec.

WIRE TROUBLES

Editor, Pulp & Paper Magazine —
Dear Sir,

I have read over the article in your issue of Dec. 21st. "Wire Troubles" by "Bill the Papermaker".

I am very much interested in this important matter of Wires referred to by "Bill" and there is no doubt that Suction Boxes so arranged as described in Fig. 2 of his sketch, that this arrangement will help to prolong the life of Wires.

I would like to ask "Bill the Papermaker" if the system of Suction Boxes as arranged in Fig. 2- can be installed by any party wishing to do so.

I understand this system has been patented and that a royalty will have to be paid by any Mill using the same.

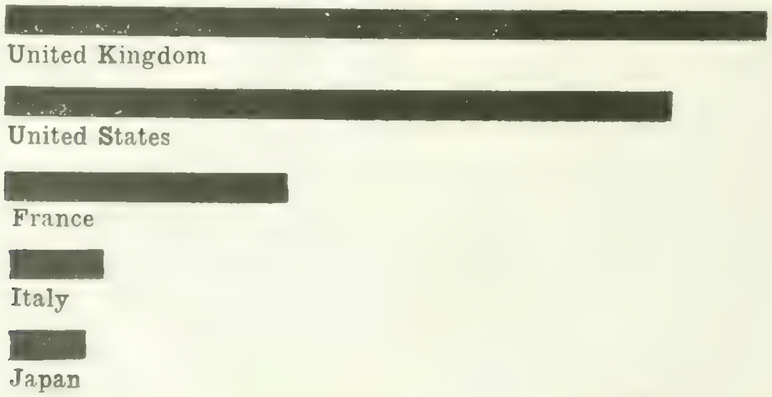
I would like this information, if possible, through the medium of your interesting columns, and for which I thank you in advance.

Wishing you the compliments of the season, I am respectfully,

Sincerely yours,
Kasee

Note: This question may be answered, in part, at least, by the article on the subject of the Life of Wires in the Pulp and Paper Magazine for Dec. 28.

COMPARATIVE IMPORTANCE OF COUNTRIES IN FOREIGN TRADE WITH CANADA
(Canadian Exports)



Contented With His Job

Something About The Man Who Realizes That Not Every Employer Can Become President of the Company

By a General Manager in "Industrial Management"

I want to say a good word for the man who is contented with his job, who is not looking ahead to a higher office or more responsibility, but is satisfied to remain an employee in the ranks, giving satisfactory service.

There is in these days of large industries much "Plenty of room at the top of the ladder" talk. House organs of big corporations are given to this sort of thing. Several popular magazines are notable for their peppy editorial contents meant to arouse ambitions.

At the risk of being called reactionary, I want to pay respect to the value of those workers who have come to realize that not every employee can become president of the company.

In our organizations — and I know that the situation is duplicated in others — it can be mathematically demonstrated that any chance of promotion from the ranks in any year is about one in one thousand. Below the tier of general and district officers there is perhaps a greater chance, due to more rapid labor turnover. But our particular business requires a considerable amount of technical education to fill the important positions which is inevitably beyond the mass of the employees.

Under such conditions there are many praiseworthy traits in the worker who recognizes the true situation and if he is to remain in our employ, reconciles himself to it. The problem of industrial management, it seems to me, is not to arouse in this class of employees ambitions which in the nature of our industrial organization can not be realized in the same generation.

The emphasis upon glorious opportunities in American industry is heard much more often than the conscience of men who recognize their limitations and who come to the same tasks and duties daily for years with no hope of promotion. There always will be those with "souls above buttons." There always will be employees capable of realizing their ambitions. But rather than the employee who offers a violence to himself and to his employer by hopeless personal ambition, give me the steady man who is willing to grow old in the same service and who gives himself wholly to the present task without thought of any larger future reward.

Most managers of industry see numbers of these steady men without fully appreciating their importance and value. Lack of so-called ambition in one's employment does not necessarily mean a lack of inventiveness or interest. Remember your high school Latin with its "ambitio," a going around of candidates for office in Rome. The ambitious employees may be the go-ers around ,the large element in our labor turnover; whereas the so-called unambitious fellows are, in the main, the permanent personnel and the foundation of industry. Of this latter kind we have many in our organization who have invented better ways of doing their work, better tools or improved arrangement of machines. In the aggregate the inventions and suggestions of these steady "workhorses" have spelled a greatly increased efficiency in our factories.

Some men are afflicted with a form of self-hypnosis. They think they can hold jobs for which nature has totally unfitted them. A deal of this modern "as you think, so are you" stuff is causing men to forget their natural inhibitions. The type of employee who knows the limits of his own abilities and strives to do his best according to his own lights is generally a better worker in a large organization than the ambitious, restless type.

I do not mean to decry well-directed efforts to arouse average workers to sustained, increased efficiency. Mass production may be increased by incentives like a bonus, prize or dividend. Workers may even thus be brought into a more cooperative delation with employer. The success of industrial relations departments and "welfarers" striving to improve working conditions of employees is fairly well established in some lines of industry. But management might increase all wages without lifting the vast majority of employees a single rung higher on the ladder of industry. There must always be the hewers of wood and drawers of water.

"Mad ambition ever doth caress its own sure fate, in its own restlessness," some poet sang. One of the letter writers illustrates this. He had been a factory manager but had failed to "make good" and was given his former position as factory cashier. He is now a less efficient cashier, unable to reconcile himself to the limitations of his nature. He is a "20-year man", still comparatively young, but unwilling to creep because he can not soar.

Contrast his case with that of a master mechanic at one of our factories. His mill was always a little better conditioned than the other fifteen in our organization. His men willingly worked overtime to make emergency repairs and at the height of the seasonal peak of work in the factories this master mechanic showed a devotion to duty that made him a shinning example to be rewarded by something better in the company.

He was made superintendent of the factory, with increased pay and a larger opportunity to display his talents.

I have never known a more unhappy individual than this master mechanic after his promotion. He wanted to remain a master mechanic. He was miserable in the superintendency for a month and then on his own request was returned to his job of master mechanic, but at a larger factory. He is still our best master mechanic.

Was this lack of ambition on his part? I do not believe so. He realized better than did we who wished to advance him that the best of blessings is a mind contented. He saves a definite sum out of his monthly salary, owns his home, reads the best mechanical and literary magazines and is not at all discouraged by the fact that as master mechanic his earning power is definitely limited.

I know a general manager who advises against too much publicity in the company's internal house organ, for those 20-year men who have not risen above the low-wage class. It looks like there is too little opportunity in the organization, he says. Himself an executive who started as messenger boy with the company, he fears to admit the very thing that he sees from his vantage place — that while there may be plenty of room "at the top" for those with the ability to get there, the great mass must fall short of reaching high station.

This is not the philosophy of "for ye have the poor always with you," nor a brief for effortless workmanship. This is not the testimony of an autocrat or a paternalist in industry, but merely an effort to look facts squarely in the face.

There may be coming a millennial age when the world's industries will be organized on a more democratic, even communistic, basis. Even if we can not grant this possibility, management with vision can see considerable room for improvement on both sides of the present system of industry. Betterments, however, can only be permanent as both capital and labor, employer and employed, rise to higher levels. Meantime, we have to deal with the ambitious and the restless and the other type of worker for whom I am here to gain greater consideration.

To reward this permanent personnel in our organization we have adopted those more or less well-established devices like group insurance, company-built homes, dormitories, factory lunches, free coffee, community gardens, mutual benefit associations, house organ and vacations with pay. These together with a reduction in working hours, Saturday half-holiday and a sincere interest in the welfare of employees have been a gradual development. We still have no separate department of industrial relations, although at times employing upwards of 7,000 men. The word "welfare" is unknown in the common parlance of the organization. With the employees 100 per cent English-speaking we have found them resentful of any patroninzing or paternalistic air and suspicious of the slightest attempt at "welfare."

Nearly every improvement in working conditions and in the relations between the management and the employees has come from the men themselves in their "efficiency meetings." Of these meetings we have three kinds, among the executives of the first class, factory meetings and joint sessions. The executives get together every Monday, the factory men every month and the joint meetings every few months as interest increases and demands a large meeting. The secret of the success of the meetings is informality, utter freedom to air any and every grievance and to compare notes.

Wage reductions have been voluntarily agreed upon in these meetings. The most intimate question of costs, profits, economies and expansions have been openly discussed in the sessions.

The important qualifications must be noted that the joint sessions are attended only by superintendents, assistants, foremen and station men, representing the rank and file who could not conveniently be massed at one time because we work three shifts, during the height of our season. These fifty workmen at each joint efficiency meeting at every one of our sixteen factories can be relied upon to present the case of the workers under them. We have encouraged them to look first after the employees' side, relying upon the management to look after the interests of the stockholders, and thus jointly to arrive at a fair decision upon every problem.

In twenty-two years' operation we have never had a strike due to difference over wages or hours. The only walkout ever staged in our factories was the result of a superintendent's undiplomatic handling of his men, and the walkout only lasted 30 minutes or until the general office by telephone assured the leaders and immediate hearing of their grievance. The superintendent was found at fault. He was transferred to the research department and eventually resigned.

If this record is remarkable it is to the credit of the mass of our employees who look forward to no better jobs with the company than their present employment. That is why in our organization we prize the men who have "settled down"; who find as much pleasure in being citizens of the same community for their adult life as others find in following ambition's will o' the wisp.

One last fact should be mentioned to avoid a possible inference that such apparent neglect of the current "peppy" strain of editorial industry has resulted in decreased efficiency and lowered production. Every factory has its rated capacity. By prize plans and bonuses we formerly succeeded in annually increasing the capacity above standard rating. In the last year with lowered wages and all prizes abandoned because of conditions in the business, we obtained the highest capacity in our history.

I do not believe that this story proves any generalization for all industry. It is easily conceivable that other factories have conditions so much at variance with ours that the same policy would fail with them. We, too, have men with the instinct for this particular business, who rise to the surface despite everything. Where such men are discovered, the management gives them opportunities to reach the higher positions. And as proof I need only cite our present chief, the president, a man who started as a weighman, surrounded by a sales manager who was a stenographer, a traffic manager who was a station agent in one of our factory towns, our auditor who was a book-keeper, and other department heads who rose from the bottom of the ladder.

MR. HOWARD S. TAYLOR,
Engineer in charge of designs and construction of the plant of the Fort William Paper Co.

NEWS PRINT PAPER IN THE U. S.

By the Secretary, News Print Service Bureau

Production of news print paper in the United States and Canada during the first ten months of 1922 was 25% greater than during the same period in 1921, shipments from the mills increased 26% during the same time and stocks on hand at the mills on October 31, 1922 were 7% less than a year earlier and amounted to only 3½% days maximum production.

According to present indications the total production of news print paper in 1922 will go somewhat beyond 2,500,000 tons or about 120,000 tons more than during the previous record-breaking year of 1920.

Imports of news print paper from Europe total 237,000 tons since September 1st, 1920, the month during which the first German paper arrived. Of this total 80,000 tons have come from Germany, 94,000 from Sweden, 44,000 from Finland, 32,000 from Norway and 7,000 tons from other European sources. The average for the entire 25 months has thus been 10,000 tons per month, but the volume has been by no means steady. During the seven months from August 1921 to February 1922 the average was 14,500 tons per month, while from March to September of this year inclusive the average has been only 7,500 tons per month.

As indicated by the figures upon mill production and shipments, consumption of news print paper in 1922 has been very heavy. As a matter of fact, for the first nine months of this year, which is as far as we have complete data, the consumption of standard news print paper was 16% more than during the same period in 1921 and 12% more than during the first nine months of the record-breaking year of 1920.

The increased consumption has been due partly to increased advertising volume over 1921 and partly to the printing of larger papers with increased circulation. There are between 60 and 70 newspapers in the United States, each having a circulation in excess of 100,000 copies. During the first ten months of 1920 these dailies averaged 23 pages each, during the same period of 1921, 22 pages and during the first ten months of 1922 the average was 25 pages. During the same periods the Sunday issues of these papers averaged 78, 79 and 88 pages.

The volume of newspaper advertising in the leading cities up to October 31 totals about 8% more this year than last and about 6% less than during the same period of 1920. If the present rate is maintained the volume during November and December this year will exceed the 1920 totals.

Periodical advertising which fell off 38% in 1921 from the great record of 1920 so far shows a gain of only 2% in 1922 over 1921.

According to the compilation of the Curtis Publishing Company, advertising in seventy-two weekly and monthly magazines in 1921 exceeded $95,000,000 in value of space, while the estimates of the Bureau of Advertising of the A. N. P. A. are that the total value of newspaper advertising in 1921 was $650,000,000 of which $180,000,000 was national advertising and $470,000,000 local advertising. Indications are for a very large volume of newspaper advertising next year.

The new machines under construction which are expected to come into operation during the next seven months will bring the capacity of the regular news print mills in the United States up to 5,110 tons daily and in Canada to 4,160 tons, making a total of 9,270 tons. It would seem, therefore, that the newspaper publishers should be able to get all the paper they will need in 1923 from North American mills without going overseas for their supply

OPACITY IN PAPER

Secret of Success of China Clay

Transparency is the name given to the capacity of a paper for transmitting light. Conversely, opacity represents the power of a paper for stopping the passage of light. Pure cellulose itself, being perfectly homogeneous and structureless, may be regarded as perfectly transparent, and it is therefore (apart from fibre structure) upon the physical modifications introduced during the manufacture of paper that the latter acquires opacity. The factors governing transparency and opacity in paper are as follow:—

(1) Structure, etc., of the fibrous constituents themselves.
(2) Conditions of beating and working.
(3) Proportion and physical characteristics of loading used.
(4) Conditions of sizing.
(5) Conditions of surfacing.
(6) Subsequent treatment of the finished paper.

(1) The approximate order of the common paper making fibres in relation to the degree of transparency conferred by them is: Straw, linen, sulphite wood, esparto, cotton, soda wood, hemp, mechanical wood; straw standing highest in this respect, and mechanical wood lowest. The great transparency conferred by straw is due partly to its physical properties (rigidity, large and thin-walled central canal, etc.), and partly to its capacity for working wet. On the other hand, the great degree of opacity conferred by mechanical wood as opposed to sulphite wood is due to the absence of the process of manufacture in the former that is undergone by the latter. Again, cotton owes its power of conferring opacity to the peculiarity of its structure, viz., the twists which the fibre exhibits and which cause it to bulk well, and thus largely to prevent continuity of surface in the finished paper.

(2) As an instance of the effect of long beating on transparency may be mentioned loan papers, where partial hydration has given the finished paper some of the properties of simple cellulose itself. Conversely, quick and short beating as in blottings produces an opaque paper by causing discontinuity of surface and consequent reflection and scattering of light. In regard to working on the machine wire, wildness of the sheet produced by hard drawing of the suction boxes gives rise to irregularity and consequent opacity.

(3) The physical nature of the loading added, no less than its quantity, has a profound effect in raising the standard of opacity. For instance, in the case of china clay, the irregularity of the particles causes proportionate scattering and reflection of light. The well-known opacity of Bible paper is due to the high proportion of loading present.

(4 and 5) Sizing, by filling up the pores of the paper and thus increasing the continuity of surface by lessening the number of reflection surfaces present, increases transparency; and the same applies to calendering, which produces this effect by oblitering air spaces. — From H. A. Bromley's book, "Paper and Its Constituents."

Arthur Jewitt, of the Montreal branch of the Provincial Paper Mills, Limited, spent Christmas at his home in Toronto.

"THE BROKE HUSTLER" TALKS SENSE

What is your position on the ladder?

Are you standing firmly on one rung, with a toehold on the rung above it, ready to move up the minute there is room?

Or, are you sitting on a rung resting until you think it is time to start to climb?

The promotions in the Paper Mill this past week make the answer to that question a very vital problem to every man, not only in the Paper Mill, but in all departments of the plant.

Mounting the ladder of promotion is something like duck shooting. You can't open your box of shells and load your gun and all the rest of it, after the duck is in sight. You have to be ready all the time, if you are going to get any ducks. The fellow with his finger on the trigger is the one who gets the ducks.

It is the fellow who has one foot firmly planted on a rung and scratching for a toehold on the rung above him that is going to make that rung the minute somebody moves up above him. The fellow who sits on a rung waiting till he thinks it is time to start, will find men shooting past him, while he is still getting ready.

There is only one way to climb. You have to be ready every minute of the day. Changes generally come suddenly. It is too late to learn the job above you and show you are qualified to fill it. There are lots of men who look far enough ahead to qualify themselves a little more every day, so that when a vacancy occurs they are fully equipped to step right into it. Those are the men who mount the ladder without having to stick too long on any one rung.

You often hear a man say, "So and So who has just been promoted, is not any better than I am." That is often very true. It is even frequently that the man promoted is not as good a man in many ways as some other man who is left on his old job. But the one man was ready, had qualified himself to hold down the bigger job; while the other fellow had the ability, but had not taken the trouble to get ready to push ahead when the man above him moved off his rung.

Preparedness is one of the points emphasized in our plant promotions.

Another point which the appointment of a new Superintendent has brought forcibly to the front, is that the management at wherever possible, believes in promotion of men in the plant rather than in bringing a man from outside. That attitude of the Company is a direct asset to every man in the plant. It means that he will get his chance provided he is not only capable of filling the bigger job, but poves his capability by his daily work.

his policy of promotion has been the policy of the Company right along; for instance, in the past year, from the first of January to the end of September there were 850 increases in rates, which means 850 promotions to better jobs. That means over ninety promotions a month, which is over three a day. Many of these, of course, were in the smaller positions,—the majority of them were. But these figures show that the door of advancement is wide open in the mill.

No one is going to grab you by the scuff of the neck and push you through the door. You can walk through if you want to. You may have to do some fighting to get through because there are lots of fellows who realize what the open door means and who are headed for it. But the big fact is that the door is open and it is up to every man in the plant, himself, whether he gets through that door or not.

Don't be downhearted if someone jostles you out of the road on your first attempt to get through the door. That does not mean that you won't get there. If you are keen enough on getting through you can, and will. But everyone can't be the first through, or the second through, or the third through. You may have to wait your turn, but the door is there and it is up to every man to fight his own way.

There is only one way of fighting. That is, as you do your daily job, no matter how small or how big, learn all you can about it, and then do more. Learn all you can about the job above you.

There is no secret about the key to success—it is simply hard work. —From an editorial.

PRACTICAL JOKERS AMONG WORKMEN

The practical joker is a pest only too well known to employers in general. He is found wherever men are gathered together in numbers, whether in shop, factory or office. He is of the type who has abundant faith in his own superintelligence and he does not believe in letting his talents lie dormant.

The sad thing about practical joking is that sooner or later it ends in injury to the victim of the prank; often it ends in death, and the employer is then faced with a very serious situation. Is he, as the employer of the victim, liable for damages to the dependents, or liable for compensation under the workmen's compensation act? This is only one problem arising out of such horseplay among workmen.

A joke for a joke's sake may be commended and may have a real part in speeding up production and promoting good feeling among the workmen, but practical joking does not belong to this classification of harmess pastime. It has its inception in a deliberate desire to "hurt" someone — the fun of the incident supposedly resting in the subsequent behavior of the victim. It is a deliberate malicious mean attempt to trifle with the person or welfare of another, and as a "joke" can appeal only to those having bullying tendencies.

Joker a Source of Potential Damages

Employers ought to be aroused against this practice among workmen, for it is not only to their interest to manifest an efficient organization, but it is to their interest in a financial way to stop these losses of industrial wastage by prohibiting practical joking and horseplay with a firm hand. The employee who indulges in it should be promptly discharged. He may be a valuable man, but he is a constant source of potential danger if his tendency in this direction is allowed free hand.

Employers may be surprised to learn that hundreds of cases growing out of practical joking have found their way to the attention of the courts. Employers have lost thousands of dollars in damages and compensation in paying injured workmen and their dependents for the "jokes" which other employees have perpetrated upon the hapless victim. And the perpetrators of the jokes have gone through life saddened and burdened with the memory of the ending of their thoughtless pranks.—C. C. Sherlock, in Chemical and Metallurgical Engineering.

Whoever fights against truth is sure to lose in the end.

THE DETERMINATION OF AVAILABLE CHLORINE IN BLEACHING SOLUTIONS

F. DIENERT and F. WANDENBULCKE

(Translated specially for *Pulp and Paper Magazine* from *Les Annales des Falsifications et des Fraudes* XV, 338-339, Sept. Oct. 1922, by A. Papineau Couture.

J. Royer recently called attention (*Ann. Fals.* XV, 146-148, April-May 1922) to Poncius' method for the determination of available chlorine. This consists essentially in titrating the hypochlorite with potasium iodide in alkaline solution. As long as there is free chlorine iodates are formed; but as soon as all the free chlorine has been used up the potassium iodide and iodate react to liberate iodine. The reactions can be represented by the equations:

$$3CaOCl_2 + 6NaHCO_3 + KI = KIO_3 + 3CaCO_3 + 6NaCl + 3CO_2 + 3H_2O.$$

$$KIO_3 + 5KI + 3H_2CO_3 = 3K_2CO_3 + 3I_2 + 3H_2O.$$

We would like to draw attention to another simple method which we use at the water control laboratory of the city of Paris. One cc. of the bleaching solution is added to 1 liter of distilled water, 2 g. of ammonium sulphate are added, and, after shaking, a few crystals of potassium iodide and some starch solution. The liberated iodine is titrated with an alkaline solution of arsenious oxide, adjusted to a strength of N/35.5, so that 1 cc. is equivalent to 1 mg. of chlorine. The ammonium sulphate is added to prevent the formation of iodate.

We have compared the Gay-Lussac, Penot, and Poncius methods with our own, and obtained the following results with chlorine solutions of various strengths:

Number	Penot's Method	Gay-Lussac's Method	Poncius' Method	Dienert and Wandenbulcke Method
1	9.40 g.	9.50 g.	9.60 g.	9.47 g.
2	3.74 g.	3.83 g.	3.83 g.	3.75 g.
3	0.64 g.	0.65 g.	0.71 g.	0.65 g.

It will be noticed that the four methods give approximately the same results; but that Poncius' method always gives slightly higher results than are obtained by the other methods. With low chlorine contents, it gives inaccurate results, the error varying according to the manner in which the iodide solution is run into the bleaching solution. The reaction between iodide and iodate does not take place instantaneously, and if the iodide soltion is added too rapidly the results will always be too high.

The following experiment clearly shows the influence of the rate at which the potassium iodide is added. One hundred cc. of a solution containing 91 mg. of available chlorine per liter was treated with 4 g. of sodium bicarbonate. By running in the iodide very rapidly, 160 mg. of chlorine was found, anad the liquid, which was light blue at first, soon turned dark blue. If the iodide is run in more slowly, two drops at a time, 117 mg. of chlorine are obtained. On adding potassium iodide equivalent to 80 mg. of chlorine, shaking for 3 minutes, and finishing the titration by adding the potassium iodide solution two drops at a time and shaking slightly after each addition, we found 99 mg. of chlorine.

The amount of sodium bicarbonate added also affects the results. We titrated 100 cc. of a solution containing 91 mg. of available chlorine per liter, operating the same way every time, but gradually increasing the amount of bicarbonate added, and we obtained the following

Grams of Bicarbonate	Available Chlorine in Mg.
1	13.8
2	12.8
3	12.1
4	11.7
10	10.3

Penot's method is not sufficiently sensitive for the titration of very dilute chlorine solutions.

In our estimation, our method seems to be the most accurate for the determination of chlorine in very dilute solution; while for more concentrated solutions it gives practically the same results aas Penot's method.

PRICE BROS. WILL MAKE 900 TONS DAILY

As a result of the negotiations recently concluded between the Provincial Government of Quebec and a new company organized to develop the power resources of Lake St. John and the Saguenay River, already in its initial stages, the Canadian Export Paper Company, Limited, Montreal, announce that Price Bros. and Co., Limited, for whom they act as export selling distributors, have entered upon a three years' program of expansion, which will ultimately increase their present daily output capacity of 300 tons of paper to 900 tons or 280,000 tons a year, thereby setting a new record for Canada.

The initial work of installation is already under way and the program calls for the production of 200 tons a day new output by January 1924 and 200 tons additional at the beginning of each of the two succeeding years until the maximum is reached.

What this development means to the newsprint business of Canada may be inferred from the fact that Price Bros. total production, when their expansion program is completed, will equal in quantity Canada's total output of less than a decade ago and will be the equivalent of more than 25 per cent of the present total output. It would supply fully 10 per cent of the present total demand for newsprint on the North American Continent.

The Canadian Export Paper Company do not expect to meet with any considerable difficulty in marketing this output of newsprint, despite its large dimensions, the favorable location of the mill giving the company equal shipping facilities to the United States, South America, South Africa, Australia and Europe. It is anticipated, however, that the present markets will have to be extended in order to absorb the new output.

Price Bros.' plans are a natural corollary of the new hydro-electric power developments which are taking place in the Saguenay District and which are intended ultimately to result in making available 1,200,000 h. p. for industrial and other puposes. The Company's contract with the new power company calls for the delivery of 200,000,000 h. p. and one of the important economies to be effected will be an estimated saving to the paper mill of about $1,000,000. a year through the substitution of electricity for coal. Sir William Price, head of Price Bros. and Co., Limited, and J. M. McCarthy, a Director, are largely interested in the new power company which has been capitalized at $25,000,000., the remaining participants including James B. Duke, of New York, and other well-known American capitalists.

Pricse Bros. and Company own or control some 9,000 square miles of freehold and leasehold timber limits in the valley of the Saguenay River and the Lower St. Lawrence, which have been roughly estimated to contain some 20,000,000 cords of pulp wood. They also own about 35,000 horsepower on the Aux Sables River, of which 7,000 is developed. Their timber holdings taken in connection with their new power contract, are regarded as placing them in a very enviable position amongst the foremost paper manufacturers in the Dominion.

IT WORKS BOTH WAYS

A great lawyer said once that he had found during his career at the bar that every bit of knowledge or even of mere information that he had picked up in his life came in handy at some time or other, enabling him to understand better some angle of a case, or to confound a witness with unexpected familiarity with a technical point. And, while there are not many lines of wark calling for such wide knowledge as that of the practicing lawyer, it is still true that a man can't know too much for his business.

It is true, also, that as selling calls first of all for personal contact, with all that this involves, the man with anything to sell and the job of selling it certainly ought to study with all his might every possible detail concerning the use and application of that which he is selling. And there are few businesses where this applies as emphatically as it does to paper.

Lest this be dismissed at once as the most obvious truism, accepted universally ever since the first paper man tried to sell a ream to his first dubious customer, it can be said that there are a great many paper salesmen who think that they have gone far enough when they know their own line with its prices and its comparative merit. And that this is not by any means far enough to go is a thing which is being demonstrated every day. In brief, what the real salesman, anxious for pleased customers, works for is to see that the goods are certain to be suited to the job for which they are being purchased, because he knows perfectly well that the paper, and the salesman, are going to be blamed if anything goes wrong.

A salesman who slipped up on a little matter of this sort not long ago, when he really knew better, told the incident to show how easy it is to get into trouble over what seems to be no fault or oversight at all. In this case, it seems, he had received from his customer a specific request for a quotation on a sheet of a given size and weight, and had been able to suit the specifications exactly. The paper was delivered, and all was lovely, apparently.

But it was not as lovely as it looked; for a few days later the customer called the salesman up in order to inform him that the job was all wrong—the printing job, that is—and that he, the customer, wanted to know why he, the salesman, had not said something about the probability of things going just as they had done. In other words, the customer had, without saying so, been relying upon the salesman's knowledge of printing, and had been disappointed.

"Why, what's the matter, Mr. Smith?" inquired the salesman. "If there is anything wrong with that paper you know we'll take care of it without any question at all. What seems to be the trouble? Just tell me about it, and we'll make good.'

"Well, there's the trouble," said the customer. "The paper is just what we ordered, all right; but you ought to have told me that that bond sheet wasn't quite opaque enough for a four-page printed circular letter. It shows through badly, especially the color work, and on one page it pretty nearly spoils the job. You asked me what I wanted the stuff for, and I told you; and yet you let me go ahead and order it. Didn't you know that we'd probably have just that trouble?"

The salesman had to admit that this might have been anticipated, or confess ignorance of a fairly elementary point. He said that he had simply thought the printer had figured that the job could be taken care of without much fear of the printing showing through, on account of the sheets being printed on both sides; and that explanation went, although it was plain that the printer was more than a little disgruntled at the disappointing effect secured from a rather expensive job.

"Now, if you can beat that for reliance on your actually chipping in on the customer's own business, I'll give you the fur-lined bathtub," offered the salesman. "Of course, that's exactly what I ought to have done. I should have suggested, in the first place, as soon as I knew what the order was for, that a much heavier sheet of paper should be used, in order to secure opacity; and I might have added that perhaps a bond paper should not be employed at all, but rather any of several other kinds of stock. But I didn't, and the net result is that my customer is sore."

And here is perhaps the most interesting point about this little incident, from the salesman's angle. It is that just as in this case a little exercise of the printer's knowledge would have helped the salesman in avoiding trouble, it is also true that in many cases knowledge of the customer's needs will enable the salesman to aid a printer customer in handling a job to better advantage than would otherwise be the case.

It happens to be true, fortunately, that a great many printers are decidedly more expert in this respect than are the salesmen who call on them to sell paper; but, again, there are few who are not willing to receive and to act upon intelligent suggestions from salesmen who have made a real study of advertising problems and effects and who, therefore, can give something of the consumer's viewpoint to help in the selection of paper to suit a given job.

It is much more often that the salesman who has got some idea of how a printing job is handled is able to tell a buyer, even a big buyer, of what should be used to secure a desired effect. He can help matters along showing printed samples, or by presenting a dummy of the proposed work. It all prevents subsequent trouble over disappointments and misunderstandings which can be avoided by the exercise of a little real understanding of what is to be done.—U. S. Paper Maker.

ST. MAURICE PAPER CO. NAMES NEW DIRECTOR

Thos. A. Wark, who has been elected a director of St. Maurice Paper Co., Limited, is a practical paper maker and he was for six years superintendent of Finch and Pruyn Paper Company, Glen Falls. He started and operated the Tidewater Paper Mills, Brooklyn, N. Y., also the St. Maurice Paper Newsprint and Kraft Plant, Cape Madeleine, Que., where he has been local manager for the past six years.

The appointment is especially interesting now that the proposition of enlarging the mills under his charge at Three Rivers, Cape Madeleine, is being considered, to being the capacity of newsprint output up to 250 tons daily.

IRONSIDES PULP STONES READY SOON

The Cleveland Stone Company for many years producers of pulp stones which carried the trade name of Ironsides will soon return to the pulp stone market with Ironsides pulp stones.

The company states that it opened a new quarry two years ago and that tests conducted during the past year has shown that the grit produced in this quarry is particularly adaptable to pulp grinding.

The quarry is being prepared for spring operations so that deliveries can be made this spring. Orders are being taken now.

WAYAGAMACK WINNERS

There is a fine spirit at the big pulp mill at Three Rivers, and laudable interest in athletic sports. The Wayagamack Football Club for the Season 1922, Winners of the St. Maurice Valley Football League and Quebec Telegraph Charity Shield are shown in the picture. A few particulars of the game are as follows:

The final game for the Telegraph Charity Shield was played in Quebec City against the S. S. Empress of Britain Eleven. In a well contested match the Wayagamack team won 1-0. The goal was obtained from a penalty taken by W. Cameron 25 minutes after the cross over. The teams were very evenly matched and the game was productive of a splendid brand of soccer. The game was really enjoyed by the large crowd of spectators. The following players made up a strong eleven representative of Wayamack for this final tie. Alex Stewart, R. Hamilton, G. Thom, R. Laird, T. Fielding, R. Thomson, W. Cameron, G. Kershaw, D. Ewen, R. Armstrong, J. Jacques.

After the game both clubs and officials were invited to a banquet on board the S. S. Empress of Britain after which the Shield was presented to the winners by the Hon. F. Carrell. The concert given by the Boat's Concert Party was greatly enjoyed and the Wayagamack Team and Officials returned to Three Rivers on the midnight train after having a wonderful time.

CURLING NOTES

The Wayagamack Curling Club expect a very busy season this year being the Holders of the Ship-Yards and Keating and Macrae trophies and which Bonspiels will be staged at the Wayamack Club on the Island this season. A very enthusiastic lot of members have joined up for the present season numbering about 80 and at the annual general meeting recently held the following officials were elected. President, Geo. Henderson; Vice-presidents, R. Carpenter, and R. Collins; Secy. Treas. J. W. Hodgson; Asst. Treas. G. Kershaw.

IF YOU STOP TO THINK

If you stop to think of it, you will realize that the city man and woman are far more concerned with what happens to the forest than the farmer or the mountaineer. It will be the city people, not those who live under the shadow of the trees, whose standard of living will first suffer from the lack of wood. It takes more wood, used in more ways, to feed, clothe and house the city dweller than those who live where the food and the lumber come from. For after the raw material is produced it must be shipped, manufactured, and distributed, and all these are impossible without wood.

WAYAGAMACK ASSOCIATION FOOTBALL CLUB

Champions St. Maurice Valley Association Football League, Winners Telegraph Charity Shield, Season 1922.

Top Row (left to right): J. Horne (Trainer), A. W. Muir, A. Hamilton, A. MacCrae, Geo. Henderson (Pres.), J. W. Hodgson (Sec'y), J. Stuart, W. Porteous, S. McCoubrey.

Middle Row (left to right): G. Thom, R. Laird, G. Smith, A. Stewart (Capt.), T. Fielding, R. Armstrong, R. J. [illegible]

Bottom row (left to right): J. [illegible], W. Cameron, G. Kershaw, D. Ewen, A. Thomson, J. Jacques.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Products

A-12 K-10 Colloidal Rosin Size. G. de MARCANDIERE **Papeterie** xliv, 970 (Nov. 10, 1922). The colloidal size prepared by the Etablissements Gillet has the following composition: free rosin 12.46%, combined rosin 38.54, sodium oxide 2.92, water 46.08. It is fairly transparent but somewhat cloudy, is viscous, and dissolves in hot water to a pure white milk without leaving any residue. With aluminium sulphate it gives a gelatinous, unctuous, and remarkably white precipitate, which, contrary to other aluminium resinates, seems to become whiter exposed to the action of air or sunlight. With lime or gypsum it gives gelatinous and unctuous precipitates, while other sizes give precipitates like very fine white sand. Under the influence of even very moderate heat the calcium resinate obtained from colloidal size forms a very homogeneous lacquer (somewhat similar to an oil varnish) which ensures perfect sizing.-A.P.-C.

A-15 Viscosity of Cellulose Solutions. (Report of the Viscosity Committee of the Cellulose Division of the American Chemical Society.) J. Ind. Eng. Chem. xiv, 1164-1165 (Dec. 1922). The method proposed for the determination of the viscosity of cellulose estser solutions consists in brief in allowing a 0.635 cm, (0.25 in.) steel ball to fall through the solution of which the viscosity is to be measured, the solution being contained in a cylindrical glass tube of definite size and the ball being released in a prescribed manner. The time in seconds which is required for the ball to pass between two marks 25.4 cm. (10 in.) apart is the viscosity in seconds. The viscosity can be expressed in centipoises by means of the formula $V = K(S - S')T$, where **V** is the viscosity in centipoises, **S** the density of the ball, **S′** the density of the liquid, **T** the time of fall in seconds, and **K** a constant for the apparatus, which is best obtained by standardizing against a liquid of known viscosity.-A.P.-C.

C. — Wood Preparing and Equipment

C-7 Are the Soaking Vats Used in Pulp Mills Necessary? S. BODLUND. **Svensk Pappers Tidning** xxv, 8 (1922); **Chem. Abs.** xvi, 4060 (Nov. 20, 1922). Pulp wood is usually soaked in warm water to free it from dirt and ice. The author points out that if the wood has not been transported by rail and has not been stored near boiler houses soaking would be unnecessary. Soaking all the wood instead of just the ice-coated wood causes a waste of steam. Air-dried wood of one year's standing containing 20 to 30% of moisture, increases in water content on soaking to 50 to 60% and burning the wet bark causes an indirect fuel loss. The author suggests storing ice-coated wood at the mill for a short while in moderately heated rooms.-A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-1 Electrometric Titration of Sulphurous Acid with Permanganate. W. S. HENDRIXSON and L. M. VERBECK, Grinnell College. **J. Ind. Eng. Chem.** xiv, 1152-1153 (Dec. 1922). The authors describe experiments which they carried out in endeavoring to find a satisfactory method for determining sulphurous acid by means of permanganate; and they conclude that the development of an accurate method is impracticable, perhaps impossible.-A.P.-C.

E-0 F-0 Modern Methods of Wood Pulp Manufacture. GUSTAVE HELLSTROM, Boving & Co., Ltd. **Paper Trade Rev.; Papeterie** xliv, 1013-1018 (Nov. 25, 1922). Brief description of the sulphite and sulphate processes.-A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-8 K-12 Felt Washer for Wet Machines and Paper Machines. C. MULLER. Fr. patent 546,232. **Papeterie** xliv, 1036 (Nov. 25, 1922). The felt passes over one or more rolls completely immersed in water and is subjected to the action of one or more rapidly rotating paddle wheels which are in close proximity to but do not come into actual contact with, the felt. Suitable sprays are provided.-A.P.-C.

H. — Bleaching, Bleach Manufacturing and Equipment.

H-4 The Mathieson System for Preparing Liquors from Liquid Chlorine. J. H. MacMAHON. **Paper Mill** xlv, No. 47, 6, 14, 16, 18 (Dec. 2, 1922). An amount of lime (about 2,000 lb. of CaO or 2,400 lb. of $Ca(OH)_2$) sufficient to absorb one ton of chlorine is made into a milk in about 8,000 gallons of water, and circulated in a 10,000 gallon concrete tank Chlorine is led from the container to the bottom of the tank through an expansion coil of 2 inch pipe about 60 feet long, which is immersed in the circulating liquor. Advantage is thus taken of the latent heat of vaporization of the liquid chlorine to counteract the heat of reaction of the chlorine and lime and prevent the temperature from rising sufficiently to cause formation of chlorates. Between the chlorine container and expansion coil is placed a pressure gauge; and when the pressure drops to zero the chlorine has all been absorbed and the batch is allowed to settle. It is claimed that bleached liquor of uniform strength and of any desired concentration can be obtained, and that the possibility of over chlorination is entirely eliminated. The equipment designed by the Mathieson Alkali Works for the transportation of liquid chlorine (one ton drums and multiple unit tanks cars with special cradles for holding the drums securely is descrribed). The advantages of the system are briefly discussed.A.P.-C.

K. — Paper Manufacturing and Equipment

K-4 K-7 Rubber Latex for Paper. Paper Mill xlv, No. 47, 10, (Dec. 2, 1922). Brief outline of the attitude of American paper men towards Kaye's recent invention concerning the use of rubber latex in paper. Though probably useful for higher grades, it is likely to prove economically succesful for lower grades such as news print.-A.P.-C.

K-7 Beater Room Efficiency. RICHARD CLAYTON. **Paper Ind.** iv, 1050 (Nov. 1922). Very brief discussion of the importance of keeping beating equipment in good condition, and of the importance of the personal factor in accomplishing this.-A.P.-C.

K-7 K-4 K-18 Beating and Beating Engines. CHARLES W. SHARTLE, Shartle Bros. Machine Co. **Paper Trade J.** lxxv, No. 22, 20-26 (Nov. 30, 1922); **Paper Mill** xlv, No. 47, 12, 28, 30, 32 (December 2 1922); **Paper Ind.** iv, 1243-1245 (Dec. 1922). A description of the Shartle breaker beater and of the Shartle system, which was developed especially for the treatment of waste paper stock for board mills. The breaker beater has a concrete tub 40 to 75 feet long, the top of the tub being about one foot above the floor line. The roll is mounted on a steel shaft carried to the hollow midfeather. The roll carries 1″ x 12″ bars, each held in place by an individual 8 inch diameter ring, and spaced on 12in. centers. The roll is mounted in specially designed trunnion type bearings carried on heavy coil springs. There is no bed plate and the roll is set 6 to 8 in. off the bottom. The backfall is of the Brownell-Buehler type with suitably perforated face. In the Shartle system the side of the beater is cut out and the stock overflowed into a sump from which it is pumped to a 24″ x 48″ x 50′ settling trough in which the consistency was suitably reduced to cause metals and heavy materials to settle and wood and cork to float (same being removed by a skimmer). It passes to a screen and the coarse stuff passes to a secondary beater equipped with Brownell-Buehler perforated backfall. The claims made for the system are: automatic removal of all foreign material from the stock, saving in labor, and saving in power. The merits of the system are briefly discussed.-A.P.-C.

K-12 M-7 Heat Economy in Machine Room Ventilation. J. O. ROSS. **Paper Mill** xlv, No. 47, 4, 42, 44 (Dec. 2, 1922); **Paper Trade J.** lxxv, No. 22, 54-56 (Nov. 30, 1922). The two general systems for ventilating a machine room consist of hooding a machine and of not hooding it; and each of these is practically divided into two more subdivisions: (1) all or most of the air is delivered towards the roof, and (2) all or most of the air is delivered in or around the dryers. These systems are discussed in turn, showing their relative merits and disadvantages. From a ventilating point of view a hood should be on every machine; but from a manufacturing point of view it is up to the mill owner or superintendent to decide the question. The use of the Briner Economizer for utilizing part of the waste heat from the machine is briefly mentioned. -A.P.-C.

K-12 K-23 Machine for the Manufacture of Extra-Fine Papers. **Papeterie** xliv, 1010, 1013 (Nov. 25, 1922). Brief description of the chief points of interest of a machine supplied to the Papeteries Vincent Montgolfier for the manufacture of extra-fine papers, including photographic papers. All rotating parts, including table rolls, are mounted on ball bearings. All parts which come in contact with the stock or with water are of bronze or brass to prevent any contamination of the sheet by specks of iron. The breast roll ball bearings are placed within the roll itself, and are protected from the water by a waterproof packing. The roll thus turns on a stationary axis, and is can be removed as easily as an ordinary breast roll. The suction boxes are circular in cross section.-A.P.-C.

K-12 Driving Paper Machine Reels. **Mon. Papeterie Belge** ii, No. 11, 7, 9, (Nov. 1922). The trouble encountered due to the gradually increasing diameter of the roll being wound has been overcome by driving the reel by means of a water turbine, the water being circulated in a closed system by means of an electrically driven centrifugal pump. (This method is covered by Fr. patent 505,614, U.S.A. patent 1,404,284, and Can. patent 215,430, Granted to B. E. Fougner).-A.P.-C.

K-12 Wear of Paper Machine Wires. J. M. DE PORTEMONT. **Papier** xxv, 435-437 (Oct. 1922). A brief description of the function of warp and filler in paper machine wires, of the more generally used weaves, and of the normal wearing out of a wire.-A.-P.-C.

K-12 The Revolving Suction Roll. HAROLD BING, Sandusky Iron and Foundry Co. **Paper Mill** xlv, No. 45, 22, 44 (Nov. 18, 1922); **Paper Ind.** iv, 1253, 1255 (Dec. 1922). A brief description of the Millspaugh suction roll and its merits both as a couch and as a press roll. -A.P.-C.

K18 K-9 Use of China in Tinted Papers. **China Clay Trade Rev.; Pulp and Paper** xx, 1043-1044 (Nov. 22, 1922). A general discussion of the use of China clay in colored papers, and of the possibility of using it to prevent mottling by first precipitating basic dyes on the clay and then using the latter to color the stock. The order in which color, size and alum should be added to the beater is also briefly mentioned.-A.P.-C.

K-14 Paper Roll Bushing. H. L. MUMM. Can patent 224,613, Oct. 10, 1922. The bushing has an annular enlargement which maintains it in the opening in the roll of paper and thus prevents it from being accidentally lost.-A.P.-C.

K-14 K-21 Slitter and Tranverse Cutter for Impregnated Roofing Paper. H. A. CUMFER assignor to GUYTON AND CUMFER MFG. CO. Can patent 224, 656, Oct. 10, 1922.-A.P.-C.

K-14 Machine for Catching Paper From Cutters. L. LA VECK assignor to SIMPLEX PAPER ACCESSORIES CO., INC. Can. patent 224,334, Oct. 3, 1922. A.P.-C.

K-15 L-8 Press Room Requirements. S. M. WILLIAMS, New York World DeGrasse Paper Co. **Pulp and Paper** xx, 1023-1025 (Nov. 23, 1922). A discussion of press room waste caused by bad splices, poor winding, improper wrapping, careless loading, rough handling, and press room operations.-A.P.-C.

K-17 K-19 The Curling of Fine Printing Papers. H. H. HANSON and H. H. HACKETT, Eastern Mfg. Co. **Paper Trade J.** lxxv, No. 21, 18-19 (Nov. 23, 1922); **Paper Mill** xlv, No. 46 14, 40 (Nov. 25, 1922). A presentation of the fundamental principles involved in the curling of paper, of the general method of attacking the problem at the Eastern Mfg. Co., and of some of the experimental results and conclusions. Curling may be described as (a) surface action, (b) set and (c) static. The immediate causes of these three kinds of curling are discussed. The fundamental causes are also discussed under these headings: beating and jordaning, beater sizing alignment of fibers, pressing and drying, tub sizing finish, and pole marks (for loft dried paper). By directing preventive efforts all along the line of manufacturing, curling can be stopped; but it requires proper methods of testing, careful instructions to the crews, and everlasting watchfulness by the foremen.-A.-P.-C. (See also this Magazine Dec. 28, 1922).

K-18 Manufacture of Millboard from Tanyard Refuse. A. T. MASTERMAN. Eng. patent 182, 884, April 6, 1921. Waste wattle bark or other tanyard refuse is crushed for 20 to 30 min. in edge-runner in the presence of a solution of sodium carbonate or other alkali, and then after admixture with about 20 to 30% of waste paper pulp, is beaten for 2 hours with water

(Continued on page 18.)

PULP AND PAPER NEWS

G. R. Warwick, president of Warwick Brothers & Rutter, wholesale and manufacturing stationers, Toronto, entertained the sales staff of his company at his residence on St. George Street, Toronto, on Dec. 27th. Among the company's representatives present were R. S Greenwood, Alberta and British Columbia: Hazen, Winnipeg: P. F. Anoris, Moncton, N. B.: F. W. Barnett, Montreal: William Woods, Western Ontario: H. A. Dawson, Northern Ontario: J. B. Frazer, Ottawa Valley All the representatives brought cheering messages concerning the outlook for trade during the New Year and it was stated by representatives of the Toronto plant that retailers in Toronto had phoned in for replenishments of papeteries supplies immediately after the Christmas trade but without results as the factory had been cleared completely out.

The incorporation by letters patent of the Ontario Government of the Sturgeon Falls Arena Company, Limited, foreshadows a lively season of sports and other recreations among the employees of the Spanish River Pulp and Paper Mills Company's employees in that town. Prominent professional and business men in the place are taking the lead in supplying the workers and others with an arena and there will be organized athletics as well as lectures, theatrical performances, summer gardens and other features. The company has an authorized capital of $40,000.

H. C. Woods, General Manager of Warwick Brothers & Rutter, manufacturing stationers, King Street, Toronto, spent several days in New York during the Christmas holidays.

Ontario paper men in the Niagara Peninsula regretted to learn on Dec. 26th of the fire which badly gutted the plant of the Pettibone Cataract Paper Company at Niagara Falls, New York, just across the river from Niagara Falls, Ont. The damage is estimated at about $40,000.

The Frankford mill of the Canada Box Board Company, which has been closed for a short time while improvements and alterations were in progress, will reopen again about the middle of January. New screens and other improvements to the beater room, together with other changes designed to increase the company's facilities for manufacture, are in progress.

R. J. Flynn, sales manager for the Buntin, Reid Company, paper jobbers, Toronto, was re-elected mayor of Weston, near Toronto, by acclamation, although Mr. Flynn had previously announced his intention of retiring from office.

P. L. Colbert, manager of the Valleyfield Paper Company, at Valleyfield, and Archie Reid, of the same Company, spent a few days during the Christmas season in Toronto.

T. A. Weldon, Vice-President of the Provincial Paper Mills, Limited, Toronto, received the congratulations of many friends on New Years Day, the occasion being his 69th birthday. Mr. Weldon spent the day in St. Thomas with his father James Weldon, who is just about one hundred years of age and in comparatively good health despite his recent sad bereavement in the death of his wife.

Joseph Kilgour, President of the Canada Paper Company, Limited, left Toronto a few days ago in company with his wife for the Southern States. Mr and Mrs. Kilgour will spend part of the winter months in Florida.

The National Paper Stock Company, Limited with a Capital of $20,000, has been incorporated under the Quebec law.

The Lois River Pulp and Lumber Company, Quebec, has been incorporated with a capital of $40,000.

A conference of the representatives of the Howard & Smith Paper mills, Limited, was held in Montreal, on December 29.

The Canadian Export Paper Company, Limited, Montreal, has issued an illustrated four page folder, printed in colours. It is entitled "Bonne Année." The first page shows the figure of a typical lumberpack, while the two inside pages depict two lumberpacks directing a drive. The letterpress accompanying this picture states "Down from the north comes the cheery New Year greeting of the French Canadian woodsman - Bonne Année — Happy New Year. — Feelings of genuine appreciation impel us to echo his hearty good wishes, passing them on to those who have made 1922 a happy year for us. Grateful for the confidence you have shown in our ability to serve you, we also appreciate the ever-widening circle of friends which this service has brought us, and the many helpful suggestions which have come to us throughout the year. We believe that our plans for expansion in the future will not only enable us to anticipate the natural business growth of our present customers, but will also permit us to increase our connections among the publishers of daily newspapers in the United States of America.

Readers of the Pulp and Paper Magazine will be glad to know that Beveridge Supply Co., Ltd., are appointed representatives for both Canada and the U. S. A. of The Consolidated Mines of Cornwall, Limited, producers of high grade English China clay. Beveridge service means satisfaction and is based on long experience and wide connections with the paper industry.

The Capital Wire Cloth and Manufacturing Co., Limited, manufacturers of Fourdrinier wires at Ottawa are sending out to their friends in the trade an exceptionally attractive calender entitled "The Bridge of Palluel." This is one of the most attractive calenders we have seen for 1923 and Mr. Buchanan deserves credit for his choice. (And somebody in the Advertising Department pinched it!)

LUMBERING IN BRITISH COLUMBIA

All over the province lumbering operations have taken on a new lease of life, and an interesting development in this connection is the erection of a railway line, forty miles long, on Vancouver Island for the Victoria Lumber and Manufacturing Company. It will open up some of the finest timber stands on the Island. To consume the enormous supply of timber tapped by this railway the company proposes to increase the capacity of the mill at Chemainus to 1,000,000 feet a day provided the lumber market remains good.

SIR EDMUND WALKER TO ADDRESS C. P. & P. A.

Below we give in a summarised form the arrangements for the 10th annual meeting of the Canadian Pulp and Paper Association on January 24, 25 and 26 in Montreal. We have published from time to time several items dealing with these arrangements, and the information now given, gives in complete form the program of the Association and the various sections.

The annual meeting of the Association proper will be held at the Ritz Carlton Hotel on Friday morning, January 26th. Among the more important matters to be dealt with will be that of making provision for the appointment of a director of Technical Research and a director of Forestry Research to direct the work of the Association in these two branches. The educational work of the Association has been broadened out during the year by the establishment of a correspondence school of paper-making and by the issuance of another of the series of text-books of the industry fathered by the Association and steps will be taken to extend and perfect these undertakings.

The business meeting will be followed by a luncheon at which Sir Edmund Walkey, president of the Canadian Bank of Commerce, and Mr. S. E. Thomason, vice-president of the American Newspaper Publishers' Association and general manager of the Chicago Tribune, will be the guests of honor. Sir Edmund Walker is expected to give a general review of world-wide business conditions with especial reference to their Canadian application, while Mr. Thomason is to talk about the interdependence of the newspaper publisher and the paper manufacturer. In addition to being a newspaper publisher himself Mr. Thomason is a director of the Ontario Paper Co., Limited, which operates a large paper mill at Thorold, Ont., and also has extensive interests in Quebec province.

In the evening the annual dinner will be held at the Ritz Carlton. Prof. Stephen Leacock of McGill University will be the principal speaker. The program will comprise a number of unusual features.

Wednesday and Thursday will be occupied by meetings of the Technical and Woodlands Sections, for which special programs have been arranged.

Among the subjects which the Technical Section will discuss and the experts who will lead in the discussions are, "The Functions of Press Felts," by E. A. Rees, Director of Research for F. C. Huyck & Sons Albany, N.Y.; "Stock Saving with and without Save-Alls", by E. J. Trimbey, Trimbey Machine Works, Glen Falls, N. Y.; "Printing Ink and Its Relation to Paper Manufacturing," by B. G. Ransom of the Ault & Wiborg Company of Canada, "The Properties of Wood in Paper-Making," by Dr. Bjarne Johnsen of the Hammermill Paper Company, Erie, Pa.; "The Utilization of Steam in a Modern Newsprint Mill," by Surrey W. Slater and J. E. Warner of the St. Maurice Paper Company and "Recent Experiments in Pulp Testing" by E. P. Cameron, Chief of the Paper Division of the Forest Products Laboratories of Canada.

The Woodlands Section has an equally well-filled program, the principal features of which will be a discussion on "Progress of Research Work in Forestry in Canada" led by Ellwood Wilson, chief forester of the Laurentide Company, Limited; "Progress in Cost Accounting for Logging Operations," by L. W. Campbell, chief accountant of the Laurentide Company; and "Limitations on the Utilization of Wood in the Manufacture of Pulp," led by Dr. J. S. Bates of the Bathurst Company, Limited

A joint luncheon for the two sections has been arranged for Thursday at which motion pictures showing improved tractor operations in the woods will be shown and a demonstration will be given of the uses of radiophones in fire patrol work, as well as a number of other features

The present executives of the Association are George M. McKee, president; H. F. E. Kent, vice-president, and Edward Beck, secretary. O. F. Bryant, of the Laurentide Company, Limited, is chairman of the Technical Section; Robert P. Kernan, of the Donnacona Company, Limited, chairman of the Woodlands Section; Col. C. H. L. Jones of the Spanish River Pulp and Paper Mills Limited, chairman of the Committee on Technical Research, and George Carruthers of the Interlake Tissue Mills, chairman of the Committee on Vocational Education.

The Newsprint Service Bureau of New York, comprising nearly all the newsprint manufacturers of the United States and Canada will hold its annual meeting at the Ritz-Carlton on Friday afternoon, January 26, and will bring to Montreal a large number of members of the industry from the United States. C. A. Babcock is president of the Bureau and R. S. Kellogg, secretary.

DO YOU EVER THINK OF "PAPER" WHEN YOU'RE BUYING PRINTING?

In a moment of captious criticism, I allowed my thoughts to dwell upon an old fogey, a friend whom I had seen fussing around for many moments during several days, over a letterhead for a new business he was planning. This, in spite of the fact that at about the age of thirty, with no start other than brains and energy, he had already made himself independent.

It was about a year before I ran across him again. Then I received a letter.

Before I had time for recollection or to read his note I was struck with the impression "Gad, this is a fine-looking and good feeling letterhead!" Then I remembered as I read his note, my previous mental criticism. "Old fogey" nothing. I had pinned myself with my unconscious impression. The letterhead had done its work and I immediately viewed my correspondent in a most favourable light.

Such a small order as even 5,000 letterheads means an opportunity to create 5,000 favourable impressions with your business connections.

It is said that Patterson, in spite of being president of the marvellously successful National Cash Register Company, once spent two days making himself a hermit from his business in the meantime for the purpose with two of his head executives, pouring over, analyzing, discarding and replacing material for a small folder. "If the two million odd people who are to receive this were in front of you now," he said by way of explanation to his executives, "you'd be overpowered with the importance of what you might say.' Well, we're going to be before them in a few weeks so, we have to do this right.'

When we buy printing and value the impressions we wish to create and for which we buy the printing in question, it is well to remember this example of careful,preparation. Nor should we neglect the vital fact that paper creates a large part of the impression resulting from any printed message. The senses of feeling and hearing, as well as sight, are affected by paper, while the printed message itself affects only one—the sense of sight —The Crest.

at 45 to 50° C., Engine size and alum, or gelatin alone, are added to the pulp during the beating, and after leaving the beater the pulp is manufactured into board by hand or in machines.-A.P.-C.

K-23 Carbon Paper. S. E. SCHUER. U.S.A. patent 1,377,368, May 10, 1921; Can. patent 224, 628, Oct. 10, 1922. The paper is coated with a composition consisting of soft soap and soot, and may be suitably smoothed or burnished.-A.P.-C.

K-23 Filter Paper Requirements. L. C. BREED. **Paper** xxx, No. 24, 7-8 (Aug. 16, 1922). Brief outline of the manufacture and properties of filter paper for quantitative chemical analysis.-A.P.-C.

K-23 The Manufacture of So-Called "Antaimoro" Paper. COLANCON. **Bull. Economique de Madagascar, Papier** xxv, 460-461 (Oct. 1922). A brief description of the method used by the Antaimoro (a Madagascar tribe) at least as early as the middle of the 16th century for making paper from "avo" ("havoha", "avoha") bark.-A.P.-C.

K-23 The Manufacture of Blotting Paper. E. ARNOULD. **Papier** xxv, 449-450 (Oct. 1922). Brief notes of a very general nature.-A.P.-C.

K-23 Process for Waterproof Wood, Cardboard, Paper, or Fabrics. F. A. ROUX Fr. patent 535,410, Jan. 24, 1922. **Chimie et Industrie** viii, 877 (Oct. 1922). A thin film of zinc or other malleable metal is electrically deposited on a conducting surface. This film is pasted or glued by any suitable method to the surface of the object to be waterproofed, either before or after removing it from the surface on which it was deposited.-A.P.-C.

M. — General Equipment

M-12 A Meter for Recording the Alkalinity of Boiler Feed Water. R. C. ARTHUR and E. A. KEELER. **Power** lv, 768-770 (May 16, 1922); **Chems. Abs.** xvi, 3521 (Oct. 20, 1922). The hydrogen-ion concentration of feed water is determined electrometrically in a new type of combined electrode. The feed water is passed through an aspirator and with its entrained air is directed against the electrode disk. Saturation of the electrode with air results and the water flow completes the circuit between the calomel electrode and the platinum gauze electrode. In effect an oxygen electrode is produced. A fixed voltage of 0.9 v. is connected in series with the recorder and electrodes to bring the measurement within the range of the recorder. An automatic recording instrument is used. A motor-operated valve automatically regulates the addition of alkali to the feed water.-A.P.-C.

M-12 Automatic Volumetric Analysis Carbon Monoxide Recorder. GUY B. TAYLOR and HUGH S. TAYLOR, E. I. duPont de Nemours & Co. **J. Ind. Eng. Chem.** xiv, 1008-1010 (Nov. 1922). The authors describe an instrument adapted for direct determination of carbon monoxide or dioxide at low concentrations, but which is also applicable, when suitably modified, to other gases and other concentrations. In principle it consists of mixing continuously measured volumes of gas with a liquid reagent and measuring the resulting electrolytic conductivity change of the solution. The novelty of the apparatus lies in the method of securing accurate control of the volume of the two fluids mixed, which consists of two piston pumps driven from a common shaft and thus stroking together, one delivering gas and the other reagent, so that the volume ratio of the two is independent of variations in the speed of pumping. Troubles due to mechanically closing valves of the ordinary types are overcome by the use of mercury traps as valves. The apparatus as described will determine carbon monoxide in flue gas or in the air up to a total of 8% with an accuracy of ± 0.2% at temperatures around 25° C. With no temperature control on any part of the apparatus except the cell the results should not be in error more than 3% of the amount present.-A.P.-C.

N. — Power Generating and Equipment

N-4 Installations for the Electrolytic Protection of Boilers and Condensers. PHILIPPI. **Arch. Warnewirtschaft** iii, 151-153 (1922); **Chem Abs.** xvi, 3993 (Nov. 20, 1922). Boilers are protected against corrosion by making them cathodes. The anodes are of iron pipe, set in but insulated from the boilers. The voltage is 20 to 30 and the current 0.02 to 0.04 amp. per sq. m. of boiler surface. The anodes last about 4000 hours. The results of trial during several years have been satisfactory. The process reduces boiler scale, partly because of the film of hydrogen formed on the boiler. -A.P.-C.

N-4 Formation of Scale in Boilers. Papeterie xliv, 874-878 (Oct. 16, 1922). Brief general discussion of the scaling of boilers and of the methods of removing the scale.-A.P.-C.

O. — Water Supply and Equipment

O-3 Prechlorination-Alum Treatment of Soft Colored Water. A. L. GAMMAGE. **Eng. News-Record** lxxxix, 391-392 (1922); **Chem. Abs.** xvi, 3990 (Nov. 20. 1922). Experiments and working results show that a low-colored mechanical filter effluent which is nearly non-corrosive can be obtained. Low alkalinity and comparatively high carbon dioxide give better color removal than simplify a final alkalinity of 10 or more parts per million as generally used in coagulated waters. Prechlorination lowers the color with the same amount or saves alum to obtain the same resulting color. Chlorine with alum gives better color removal with higher alkalinity and lower carbon dioxide. Soft corrosive water may be treated with lime soda after mechanical filtration rather than with coagulants in a treating basin before filtration to obtain much better removal of color and equal removal of carbon dioxide to obtain the lowest practical corrosive with the purified water.-A.P.-C.

R. — General

R-1 An Italian Paper Mill. Papeterie xliv, 926-930 (Oct. 25, 1922). A description of the groundwood and paper mills of the Pirola Co. of Milan.-A.P.-C.

R-2 What May be Accomplished by Plant Papers. ERNEST AUGUSTUS, Editor of "Mead Co-Operation". **Paper** xxxi, No. 3 16, 18, 20, 35 (Nov. 8, 1922). A discussion of essentials to be considered in editing paper mill organs going to employees.-A.P.-C.

R-5 Foreign Newsprint-Paper Industry and its Relation to the United States. CONSTANT SOUTHWORTH. **Pulp and Paper** xx, 993-995 (Nov. 16, 1922). A general analysis of the present status of the news print industry and news print throughout the world. -A.P.-C.

R-5 The Coarse Paper Situation in the United States. D. C. EVEREST, Marathon Paper Mills. **Pulp and Paper** xx, 969-972 (Nov. 9, 1922); **Paper Trade J.** lxxv, No. 17, 18-21 (Oct. 26, 1922); **Paper Ind.** iv, 1051-1055 (Nov. 1922); **Paper** xxxi, No. 3, 11-14, 34, (Nov. 8, 1922). An outline of the present status of the wrapping paper industry.-A.P.-C.

UNITED STATES NOTES

The Paper Division of the Department of Commerce has received a report from the American Consul at Yokohama, Japan stating that wood pulp sent from Canada to Japan is now ruling the Japanese market due to the recently established low freight rate of $4.50 per ton. The Canadian product can sell in Japan at a profit for 6 sen a pound while the production cost on the Japanese pulp is from 6 to 7.2 sen. The Japanese made strenuous efforts to increase the duty on pulp to 0.2 sen or even 0.5 sen but failed. As an alternative measure the manufacturers formed the Kyodo Pulp Kaisha to avoid competition from abroad.

President Harding's Cabinet in conferences last week considered the question of the placement of the Forestry Bureau. The Bureau is now in the Department of Agriculture. It has been proposed that it be transferred to the Interior Department. The issue is understood to have caused serious concern to the President and to have been responsible for rumors regarding the resignation of members of the Cabinet. Secretary of Agriculture Wallace and Walter F. Brown of Ohio, who is planning reorganization of Government departments, were closeted for an hour last Friday with President Harding. Gifford Pinchot, Governor-elect of Pennsylvania and one time Chief Forester, visited the President at the White House during the week for a discussion of the proposition. It is stated that as a result of the conferences President Harding has been pledged as disapproving the proposed transfer of the Forestry Bureau. Forest conservationists have been strongly opposing the transfer on the grounds that under Secretary of the Interior Fall's policies regarding public lands too much of the vanishing timber reserve of the country would be opened up for cutting by private interests. Timberland in the country is now being cut four times as fast as it is being reforested, the conservationists say.

That Radio is to play an important part in the prevention of fire in the national forests is the belief of C. M. Allen, telephone engineer for the United States Forestry Service. Radio engineers believe that there is a relation between statics and humidity, and Mr. Allen says that if this relation can be determined so that it will become possible to tell atmospheric conditions and predict these conditions in advance, many thousands of dollars will be saved annually in the prevention of forest fires. A station which is conducting experiments along this line has already been installed at the Wind River experiment station, Mr. Allen states, near the Cascade locks on the Columbia River, Oregon, and is one of the most complete and sensative radio receiving sets in the country.

The nationally important problem of reforesting millions of acres of burned Western forests is declared by Government experts to have been solved by using airplanes to drop seeds over large areas difficult of ordinary access. In addition to this, Department of Agriculture scientists have equipped planes with laboratory apparatus for catching the spore of plant pests which migrate through the atmosphere from one part of the country to the other.

Percival Wilds, receiver for the Hercules Paper Corporation, has advertised the sale by public auction of the company's mill property at Cornwall, N.Y., January 11, 1923. The property includes an improved paper mill, more than 64 acres of land with improvements, storehouse, workmen's dwellings, railroad siding and water power.

According to a report received by the Department of Commerce from the American Vice-Consul at Rio de Janeiro, the Brazilian Federal Senate is considering a measure to encourage the establishment in Brazil of a factory producing printing paper from Brazilian raw fibers. The bill provides for a Government subsidy taking the form of a loan granted to the first company organized to carry out the purpose of the measure.

A quick opening valve, designed for use on stuff lines in paper and pulp mills, has been perfected and patented by W. J. Brooks, chief millwright of the Colin Gardner Paper Company, Middletown, Ohio. This valve has been developed after many years of experience in paper mill work and possesses a number of noteworthy features.

Thomas Harvey, Sr., veteran papermaker, died at his home in Middletown, Ohio, December 21. Mr. Harvey was associated with the Gardner-Harvey Paper Companies since 1899. Before that he was identified for a number of years with the Rolland Paper Company, St. Jerome, P.Q., and the E. B. Eddy Company. He is survived by a widow, two sons, four grandsons and one great grand-daughter.

The American Pulp and Paper Superintendents' Association has decided to hold its 1923 convention in Springfield, Mass on May 31, June 1 and 2. About 600 delegates are expected to attend.

Box board mills are again experiencing difficulty in getting ample raw material. Old paper stock is in great demand and prices of this and other stock are still advancing. Some Chicago box board mills have been withholding their orders for old paper stock and are now finding themselves short, with no regular supply assured.

The Kimberley-Clark Company of Neenah, Wis. is distributing in commemoration of its fiftieth anniversary a profusely illustrated booklet that describes its founding and progress made during the half century it has led as a paper manufacturing establishment. The first 25 years are sketched by J. A. Kimberley, president of the company, and one of the "Big Four" who organized the company on March 26, 1872. J. C. Kimberley, son of the president and now second vice-president, describes the second 25 years' activities.

J. E. Smith, who recently purchased the plant of the Ironsides Board Corporation at Norwich, Conn., and is now operating it as the Uncas Paper Board Company, has announced that J. H. Eilers has resigned as mill manager of the New Haven Pulp and Board Company to assume a similar position with the Uncas Company.

Production at Northern New York pulp mills has been greatly reduced due to low water. Streams in the Black River region are at record low water mark and power plants are faced with the necessity of shutting down, with no prospects of relief in sight. A similar condition is reported in parts of Wisconsin and other States in the West.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, January 2. — Stock-taking has, to a certain extent, interfered with the local paper trade during the past week. Consumers are not desirous of placing any orders outside their immediate requirements, and in turn the jobbers are not inclined to add to their stocks. Notwithstanding this circumstance, business has been fairly good in most lines.

If expectations are fulfilled, 1923 will be a satisfactory year for the paper trade. Although there is no immediate prospect of an advance in values generally, it would not be surprising if prices went up. Representatives of mills state that raw materials are costing more, and that if there is no check to this upward movement the extra cost will soon have to be passed on to the consumers. It may be taken as pretty certain that manufacturers, as a body, do not want a high market; it means ultimately a decrease in consumption, and in the end is of little or no value to the manufacturers. Steady business with a fair margin of profit is what the mills and the wholesalers are aiming at.

The newsprint position is without change. The general view is that the demand will continue very brisk for a considerable period. The American publishers are keen as ever on increasing circulation, and with this object are adding features to their issues. Advertising is also good, and the prospect in that direction is in favor of being on a generous scale, all of which goes to sustain the phenomenal consumption of newsprint.

In other paper lines the situation varies; there is a lull in the call for wrappings. The holiday buying being now satisfied, there is an inclination to go slow for a time. Book papers, writings, bonds and ledgers are in moderate request, with the higher grades dull. The trade in tissues and toilets is still good. Boards have slackened; business is still fairly good, but there is naturally a drop in orders now that the holidays are over. Waste paper is picking up a little, while rags are being well bought.

The export trade is keeping up; competition is still very keen and it is apparent from the latest returns that British papermakers are very active in trying to retain their foreign connections.

In the pulp department, groundwood remains the predominant feature. The demand is as good as ever, and it looks as if the market will continue very strong during the winter. Bleached sulphite is quiet, but with the prospect of an increased call in a very short time. The cost of manufacturing is moving upwards, and if it goes on a further advance in prices may be expected. Sulphite is in moderate request.

The market for pulpwood is gradually strengthening, and higher prices are looked for by the dealers.

MADE HIM NERVOUS

"Your honor, I was not intoxicated."

"But this officer says you were trying to climb a lamp post."

"I was your honor. A couple of crocodiles had been following me around, and I don't mind telling you they were getting on my nerves."

ONTARIO MARKETS REVIEWED

The year 1923 is one which is being scanned with considerable interest by the paper trade in Ontario in every branch of the industry. A year ago the outlook was rather uncertain, 1921 being a time of general depression and a period of deflation. Many producers were unprepared for the slump when it came, and getting things down to replacement value was one of the chief problems during 1921. The greatest recession in prices was in newsprint which dropped from $110, and even as high as $120 to $70 a ton. There were corresponding decreases in other prices during 1921 and the average reduction from the peak values of the preceding prosperous year, 1920, was about 33 1/3 per cent.

1920 was a year of unexampled prosperity and abounding expansion, being the greatest boom period in the history of the Ontario and Canadian trade, with every machine running at capacity and an incessant call from both at home and abroad which could not be met. Toward the end of the year the far-seeing ones discerned that the structure was reared on an unsubstantial and artificial foundation and began to slow up, but the warning in most cases came too late and when the bottom fell out of the market, it found the mills with a great deal of high-priced materials produced at the zenith of cost. The reaction in 1921 was slow and uncertain but the paper trade came through the period of readjustment with fewer catastrophies than almost any other business. The members of the Canadian Paper Trade Association took counsel among themselves and by a unity of interest and a mutuality of effort, managed to steady the situation and avoid panic on the one hand and rashness on the other. The result was that not a single member of the Association made an assignment, a really astonishing situation when one considers the number of financial reverses there were in other allied lines. The mills also had a rather trying time in 1921 as business fell off markedly and there was little disposition to buy in quantities.

At the beginning of 1922 things assumed a different aspect. The trend of events had turned and the horizon grew a little brighter. Manufacturing expenses had been cut to the limit and close study was given the situation to see that producing costs were brought down to the lowest possible basis and that high-priced stocks of pulp and pulpwood were used up as speedily as possible. Many manufacturers reduced their inventory by thousands upon thousands of dollars in order to get down to rock bottom, believing that the first loss, so to speak, would be less severe than to drag out the operation of assuming a deficit little by little. The earnings of the majority of companies were largely reduced and in some instances dividends were passed, but with the beginning of 1922 labor had become more efficient, cheaper coal was available, groundwood and sulphite pulp had taken a substantial drop and rag and waste paper stocks were sympathetically weak. However, this is all now a matter of history and 1922 on the whole witnessed a larger volume of business with most of the mills and jobbers than in 1921. This is particularly true of newsprint, kraft and book papers.

There were several fluctuations in prices during the year just closed, the first few months witnessing substantial reductions on nearly every line with the exception of newsprint which showed remarkable strength and led the way in a rapid recovery towards normal conditions. Orders for the most part during 1922 had been small, but in the aggregate they have mounted up to surprisingly large totals with many firms who are closing the year with a substantial balance on the right side of the ledger. The last six months in all lines of paper have shown a decided improvement over the first six months of 1922. There has been a greater feeling of confidence developing with conditions getting back to normal.

It is believed that 1923 will be a year of steady demand and sound operation. No one is looking for a boom, but it is felt that all fictitious and speculative elements have been eliminated from the business and things are now on a sure footing with a clearer pathway than has been the case in the past two years. A healthy sign is that a number of Canadian concerns are now looking toward the export field and hope to build up a good outside trade to take care of the surplus product.

Generally speaking, prices on bonds, ledgers, writings, book, coated and special lines of paper are a little lower at the present time than at the beginning of 1922. In June values were possibly at their lowest, but most lines took an upward trend during the fall months. This was due to the rising cost of pulp waste papers, rags, scarcity of coal and other contributing causes. Bond papers, generally speaking, are from 1c to 1½c cheaper than they were a year ago, and the same applies to ledgers and writing papers. Wrappings are, in most cases, a little higher and this trade is quite active at the present time, which speaks well for the general business situation and outlook. Kraft is ¾c cheaper, while groundwood pulp has lately taken a sharp advance, being quoted all the way from $42 to $55 as a number of plants have been shut down for repairs, etc. There has been an unusual call for mechanical pulp and this, together with the decreased production, has resulted in the advancement of values. Bleached sulphite has held its own pretty well during the year and prices closed a little stronger than they opened. News grade and easy bleaching sulphite were weak during the major part of 1922 and are not yet very active. For sulphate pulp there was only a fair demand.

A comprehensive review of the whole situation shows that 1922 was, on the whole, a fairly good one for the Ontario paper industry. Of course business was pretty spotty at times and there was considerable seesawing in prices, particularly when several American manufacturers offered their surplus product at a considerably reduced figure in order to find a market for it. However, the industry soon revived on the other side of the line and with the growing activity, the Canadian field was not exploited, and prices, which had been reduced by Canadian manufacturers to meet the competition were restored to their former level. It is maintained by some that values on certain lines of paper are already too high, while others contend that they need strengthening in order to yield an adequate profit. On the whole, however, it is felt that there will be very few changes in quotations during the first few months of 1923. Stabilization of prices and a normal demand are the great considerations, and with this end in view, all branches of the industry seem to be working in harmony.

In some respects the first part of the year was a trying one for the mills, particularly those producing flat papers. Orders were small and varied and runs had to be changed frequently to meet the exacting demand for different weights, colors and grades. Customers were very particular to have their instructions explicitely carried out and all products from the mills were given the closest scrutiny. However, this pernickty feeling passed when business grew more buoyant during the last few months and it was not nearly as difficult to satisfy wholesalers or large consumers.

Much other comment might be made upon the various phases of the pulp and paper activities during the year which has closed and predictions freely indulged in with respect to what 1923 will bring forth. The watchwords for the coming twelve months are conservation and stability, and with a steady step, a spirit of cooperation, fresh courage and willingness to work, there is no reason why 1923 should not be one of the best that the pulp and paper world has shown.

It is pointed out that in times of difficulty or danger the middle course is the safest one to pursue. The period of danger was in 1920 when values soared amazingly and buyers went wild. The period of difficulty was in 1921 and the fore part of 1922 with the trade recovering its equilibrium and gaining its balance. 1920 and 1921 taught producers, distributors and consumers useful lessons, and profiting by the experiences of the past and looking forward to the future with faith and determination there seems to be no cloud on the horizon or barrier in the pathway that will hinder progress or handicap expansion. Several new plants will soon be producing and other extensions are on the way. These developments are the most practical expressions of how the trade regards itself for 1923.

The following table shows comparative prices over the past year.

	January 1922	June 1922	December 1922
Bonds			
Sulphite	12½-14	11 -12½	11 -12½
Light tinted	13½-15	12 -13½	12 -13½
Dark tinted	15 -16½	13½-15	13½-15
Ledgers, sulphite	15½	13	13
Writing, f.o.b. mills	11½-15	10½-13½	9½-12
News Rolls—carloads	3.50	3.50	3.75
News Sheets—carloads	4.25	4.25	4.50
News Sheets (2 tons and over)	4.50	4.50	4.75
Book—No. 1 M.F.	10.00	9.50	9.00
No. 2 M.F.	9.00	8.50	8.00
No. 3 M.F.	8.50	8.00	7.50
No. 1 Coated and litho	15.00	14.00	14.00
No. 2 Coated and litho	14.00	13.00	13.00
No. 3 Coated and litho	13.25	12.25	12.25
Coated and litho colored	15.25	14.25	14.25
Wrapping			
Grey	4.75	4.50	5.00
White wrapping	5.25	5.00	5.75
"B" Manilla	5.75	5.50	6.00
No. 1 Manilla	7.50	6.75	7.25
Fibre	7.25	6.75	7.25
Kraft	8.75	8.00	8.00
Pulp			
Groundwood	$25.00-$32.00	$27.50-$35.00	$35.00-$42.50
Sulphite easy bleaching	65.00- 70.00	60.00- 65.00	60.00- 70.00
Sulphite News Grade	60.00- 65.00	50.00- 55.00	55.00- 60.00
Sulphite bleached	95.00-100.00	90.00 95.00	95.00-100.00
Sulphate	75.00	70.00	70.00

NEW YORK MARKETS

New York, December 30 (Special Correspondence)

There is no question but that the holiday period has served to slow down business in paper to some extent, and the market in New York is quieter at the moment than it has been in quite a while. Manufacturers and merchants are busily engaged in compiling inventories and are consequently neglecting to augment their stocks of paper, while paper producers also are occupied with inventory and are not pushing sales for the present. Nevertheless, there is a good movement of paper of most kinds. Much of the trade activity this week has been of retail scope, consumers limiting their buying to small quantities needed against actual requirements, yet the movement of paper on contracts continues at a good pace, and, viewed in the aggregate there is probably more life to the market than is usually the case at just this time.

The end of the year is here, and it can be said that prospects for paper manufacturers in the new year are most encouraging. There is every indication that 1923 is to be a busy and prosperous year for the paper industry. General business conditions are favorable, and every visible factor at this time seems to promise a large and steady consumption of paper of all kinds during the next twelve month. No one looks for any boom in the paper market; no one desires any boom, but it is indeed encouraging to note the confident sentiment prevailing among paper men, a great majority of whom expect consistently good business of exceedingly healthy character in the new year. Many feel that a new high record of consumption of newsprint, of book paper, of fine papers and of box boards will be established in 1923. Opinion on this score is based on the situations in the markets for these descriptions of paper in recent months, and the favorable outlook for continued heavy consumption throughout the new year.

The monthly report of the Federal Trade Commission for November shows that production of newsprint in the United States declined slightly during that month, compared with October. Domestic mills produced 127,983 net tons of total newsprint in November contrasted with 130,682 tons in the preceding month, 104,604 tons in November a year ago, 122,993 tons in November two years ago, 116,603 tons in November three years ago, 101,403 tons in November four years ago. A total of 75 mills reported to the Commission in November. The average, production of total newsprint in November was 16 per cent. above an average, based on reports covering the past five years, and that of standard news was 18 per cent. above an average. Mill stocks of print paper declined slightly last month from 19,745 net tons of total newsprint held at the beginning of the month to 19,651 tons at the close of November.

The new contract price of newsprint as fixed by the leading domestic producer goes into effect on Monday next, when standard news will be sold to contract customers at $75 a ton f.o.b. mills instead of $80, the price which has prevailed during the greater part of 1922. It is understood on good authority that nearly all of the print paper that is likely to be produced by domestic manufacturers during the next few months has been taken on contract, publishers having been actively engaged recently in arranging commitments covering the first months of the new year and having contracted for additional large tonnages over their last contracts. This in itself should insure a strong market for newsprint for some time to come. In fact, it is stated that spot buyers of newsprint are likely to experience much difficulty over the next few months in covering their wants, and it is believed that premiums will be demanded and paid for spot deliveries.

There is much optimism felt in the trade with regard to book papers. Most manufacturers and jobbers expect a considerable further expansion of demand for all grades of book paper since it is readily conceded that consumption of this class of paper has not as yet increased in like proportion to that of other kinds of paper. The steady growth of advertising is helping publishers of magazines and trade periodicals to enlarge the size of their publications to that reached a couple of years ago, however, and it is believed that a much larger consumption of book paper will be experienced in 1923 than in 1922.

There is still a comparatively quiet demand for box boards. Consumers are buying cautiously and mainly in small lots, and the fact that this is the in-between season for boards puts a damper on demand. Quotations on board, however, show a stiffening tendency, due principally to the rising trend of raw material costs. Plain chip is quoted at about $52,50 a ton f.o.b. New York, and filled news board at around $55 per ton.

GROUND WOOD— Most reports tell of a slowing down of demand for mechanical pulp and yet proof is not wanting that there is, in the aggregate, a very good movement of supplies into consuming channels. Newsprint mills are absorbing ground wood in a consistent way, and there is also a fairly steady call from board manufacturers, though it is true that current buying is mainly against immediate requirements. Not much, if any, change is noted in quotations. Here and there buyers are picking up limited-sized lots of ground wood at shaded prices, but producers generally continue to ask $40 a ton for freshly ground spruce pulp f.o.b. grinding plants and are said to be securing this price in most sales. A strong factor in mechanical pulp is that visible stocks are light, much lighter, in fact, than normally, and under the circumstances producers are not pressing sales and are holding pulp for full asked prices.

CHEMICAL PULP— An easy undertone is still perceptible in the chemical pulp market. Demand at present is spotty and is at best of small volume. Paper manufacturers are buying when their requirements dictate, but otherwise are getting along with contract supplies without entering the market as purchasers and this lack of important demand, coupled with continued heavy arrivals of pulp from Scandinavia, makes for a soft price situation. Importers assert that there is not likely to be any real break in prices though acknowledging that at the moment they are seeking to dispose of some lots of pulp at concessions. It is their contention that after the present period of heavy shipments from Europe not much pulp will be received from abroad, while demand from customers in the States is expected to increase, and it is a concensus of opinion that soon after the turn of the year the market will begin to strengthen.

RAGS— Increasing activity in low grades as used in the manufacture of roofing felt continues to feature the market for papermaking rags. There have been some roofing paper manufacturers activily in the market this week and prices on those rags consumed by them have been advanced another couple of dollars per ton. Sales of N. 1 roofing stock at 1.25 cents a pound f.o.b. New York have been reported, and No. 2 packing has brought 1.15 cents. Even at these figures offerings are limited. Dealers say that the heavy snow storms throughout the country have served to curtail collections and that stocks in their warehouses have been well liquidated, while the low prices prevailing until lately have greatly reduced imports from Europe. Other grades of rags hold steady in price but are moving principally in routine fashion. New cuttings are quotably firm, with dealers assuming a waiting attitude while expecting higher prices when mills again start buying. Old whites are steady, as are thirds and blues, with not a whole lot of trade activity noted in these grades.

PAPER STOCK— Low grades of old paper are still advancing in a market that exhibits much strength. Demand from board mills is nothing out of the ordinary but the mere fact that some consumers are absorbing newspapers and mixed paper in comparatively large amounts at just this period of the year is causing packers to demand stiff prices, and they are seemingly getting the figures asked. Folded newspapers have sold this week at 1.25 cents a pound f.o.b. New York, and No. 1 mixed paper at 95 cents a hundred pounds. Even higher prices than these have been reported paid in some cases. Old kraft paper is holding firm at around 2.15 cents a pound New York, and there is considerable firmness in prices on flat stock, about 2.40 cents or a shade higher being quoted on No. 1 heavy magazines, and around 2.10 cents for mixed books. Shavings are unchanged and are wanted by mills in limited tonnage. No. 1 hard white shavings are quoted at 4.25 cents per pound New York, and No. 1 soft white at an average of 3.50 cents.

OLD ROPE AND BAGGING— Probably the strongest factor in old rope is that the visible supply of this article is light. Dealers say they are not beginning to receive normal amounts of old rope from collection sources, and hold to the opinion than any increase in demand from consumers would lead to an immediate jump in prices. Current sales are mostly at about 6 cents per pound at shipping points for No. 1 domestic manila rope, with buyers getting some few lots at a little under this price. Old bagging is dull and is freely offered at $1 a hundred pounds f.o.b. New York for No. 1 scrap bagging. Gunny bagging is in relatively good demand at around 1.25 cents per pound at shipping points.

JAPAN WILL PROTECT HER PAPER INDUSTRY

New York, Dec. 30 — "The New York Commercial" says that Japan realizes that if she is to maintain her position in the paper industry she must take some drastic steps. Accordingly, she has organized, her paper mills into a trust, eliminating numerous smaller plants, with the idea of maintaining the price of pulp at a normal level. Bleached pulp will be manufactured with a determined view of checking importation from the United States, Canada, and the Scandinavian countries.

The paper mills which have thus been grouped together represent a total production of about 30,000 tons annually.

While Japan has a perfect right to do this it is questionable if she is acting wisely, for some retaliatory measure may be adopted toward her by the nations most interested, and today Japan needs not only the business, but the friendship of the entire world.

Pulpwood logging in northern Wisconsin and Minnesota has been started and recent snowfalls have given it impetus. A logger for the Marathon Paper Mills has already produced more than 1,000,000 feet of his contract for 3,000,000 feet.

If conscience smite thee once, it is admonition; if twice, it is condemnation.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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With the Woodsmen

WATER-KILLED TREES CAN BE MADE INTO PULP

In the development of water powers on Canadian rivers the erection of a dam has sometimes caused large areas of forest land to be inundated. The trees on these areas are drowned by such continuous submersion and the wood appears similar to dead and weathered wood. The use of such wood for sulphite pulp has been regarded as impracticable but the Forest Products Laboratories of Canada, Forestry Branch, Department of the Interior, have made trials of this material and find that the discolouration due to water is hardly perceptible in the unbleached pulp while in the bleached product every trace of colour due to the special nature of the material disappears entirely.

AUCTION SALE OF TIMBER PERMITS

Quebec Dec. 31 — The most important sale by auction of permits to cut timber in this province held for years is announced to take place on the 30th of January in the forenoon in the legislative buildings, Quebec, presided over by Hon. Honore Mercier, minister of lands and forests.

The price of adjudication will be $800,000 for the first series of limits which are situated on the North Shore region, in the basin of the Manicouagan river and its tributaries, being the continuation of the timber limits of the Manicouagan and English Bay Export Company, and comprising an area of 2,000 miles. Intending bidders must deposit on or before the 27th of January, 1923, the sum of $150,000 with the Department of Lands and Forests, which will be forfeited if the depositor does not offer a bid at least equal to the upset price, or, if successful, he does not sign the contract; $100,000 of the amount deposited shall be applied for part of the payment of the price of adjudication and $50,000 will be retained until the water powers have been developed and a pulp and paper mill erected.

It is provided that the payment of the price of adjudication may be made in three equal instalments, the first immediately after buying the permits and the other two within two years, with interest at the rate of 6 per cent.

Provisions are also contained in the deed of sale by which the purchaser must lease and develop the water powers known under the name of Riviere Custardes and erect a mill within seven years on the Manicouagan river or the Custardes river for the manufacturing into wood pulp or paper of the wood cut, with a minimum capacity of 100 tons per day, and develop 15,000 horsepower. The following sale of permits for other regions is also scheduled to take place on the same date:

Abitibi region: 1, townships of Landrienne and Duvernay, six square miles; 2, township of Brassier, 2-3 square mile; 3, township of Manneville, 12 square miles; 4, township of Malartic, 24 square miles.

Counties of Charlevoix and Saguenay: 1, No. 87a, River Petites Bergenonnes, 11 square miles; 2, township of Callieres, 10 square miles.

County of Bonaventure: 1, township of Carleton, block No. 5, 10, 1-3 square miles.

Permits for the cutting of burned timber, Abitibi region: 1, township of Launay, 6½ square miles; 2, township of Paularies, 3 square miles.

REVIEW OF FORESTRY LITERATURE

B-2 One Cord an Acre a Year. W. M. BAKER, Assistant State Forester of New Jersey. **J. For.** xix, No. 7 (Nov., 1921, p. 754). Discusses rate of growth in New Jersey, and value of thinnings and improvement cuttings. Describes a plantation, mainly of Norway Spruce, on good soil, that has grown 19,000 board feet of sawlogs per acre at 34 years of age, or 560 board feet per year.-C.L.

B-3 Forest Fire Risk in Massachusetts. H. O. COOK, Chief Forester, Mass. Dept. of Conservation. The fire risk varies greatly, according to local conditions and protective measures should be adapted accordingly. In Massachusetts most of the fires occur on Saturdays and Sundays, due to carelessness of city or town dwellers temporarily in the woods.-C.L.

B-3 Aerial Forest Fire Patrol in Oregon and California. C. W. BOYCE. **J. For.** xix, No. 7, (Nov., 1921, p. 771). Notwithstanding the demonstrated high value of aircraft for the prompt detection of forest fires, the author concludes that lookout towers will not be superseded, but will still be needed, in addition to the patrol by aircraft.-C.L.

B-4 The Effect of Spiral Grain on the Strength of Wood. T. R. C. WILSON, U. S. Forest Products Laboratory. **J. For.** xix, No. 7 (Nov. 1921, p. 740). Spiral grain is as weakening as other forms of cross grain. As a result of tests, it has been recommended to the U. S. War and Navy Departments and to aircraft manufacturers that slopes of grain in excess of 1 to 20 should not be permitted in highly stressed parts.-C.L.

B-9 A National Policy for Foresters. RUSSELL WATSON, Univ. of Michigan. **J. For.**, xix, No. 7, (p. 748 Nov., 1921). Strongly deprecates pessimistic attitude on part of foresters as to what should be advocated. Urges vigorous program of reforestation and of practice of silviculture on all forest lands. The best brand of forestry is none too good, and this should be advocated, rather than the minimum.-C.L.

B-9 Conservation of the Timber of British Columbia. R. W. HIBBERSON. **J. For.** xix, No. 7 (Nov. 1921, p. 776). British Columbia is credited with having 350 billion feet of standing timber. Of this, part is unavailable because of inaccessibility. Of timber logged, only half ever reaches the mill, because of breakage and incomplete utilization. The author estimates that the virgin forests of the province today represent only 100 billion feet of actually available merchantable saw timber, under present methods of logging and utilization. This is the estimate also of Dr. Judson F. Clark. Most of the small timber is wasted, although in the eastern prorvinces it would be extremely valuable. Low stumpage values force wasteful methods of exploitation. With depletion of accessible supplies, logging costs have increased tremendously. The present output of timber is two billion feet per year, which will be doubled within five years, and tripled within perhaps 8 or 9 years. The author predicts a timber famine in British Columbia within 15 years. He urges the adoption of logging methods that will leave cut-over lands in a condition to produce another crop; reduction of fire hazard by slash disposal; intensified fire protection, and reforestation of logged-off areas in the interior. Depletion of our forest has not resulted from their use but from their devastation. "There is no country in the world that would tolerate the wasteful logging methods practiced on the Pacific Coast of Canada and the United States."-C.L.

WHEN THE DRIVES GOES DOWN

From Woods Number of the Spanish River News

There's folks that like the good dry land, an' folks that like the sea,
But rock an' river, shoal an' sand, are good enough for me.
There's folks that like the ocean crest, an' folks that like the town—
But when I really feel the best is when the drive goes down.

So pole away, you river rats,
From landin' down to lake—
There's miles of spruce to keep in line,
A hundred jams to break!

There's folks that like to promenade along the boulevard,
But here's a spot I wouldn't trade for all their pavement hard;
Ten thousand lawgs by currents birled an' waters white that hiss—
Oh, where's the sidewalk in the world that's half as fine as this?

So leap away, you river rats,
From landin' down to sluice;
There's lawgs to run, there's peavy fun
To break the timber loose!

An' ev'ry rollin' of a stick that starts her down the stream
An' ev'ry bit of water quick where runnin' ripples gleam
Means gittin' nearer to the end, to wife an' babe an' rest—
An' ev'ry time you turn a bend the next bend looks the best.

Then peg away, you river rats,
From sluiceway down to mill—
Each rock you clear will bring you near
The house upon the hill!

There's folks that like the good dry land, an' folks that like the sea,
But rock an' river, shoal an' sand, are good enough for me.
There's folks that like the ocean crest, an' folks that like the town—
But when I really feel the best is when the drive goes down!

—Douglas Malloch.

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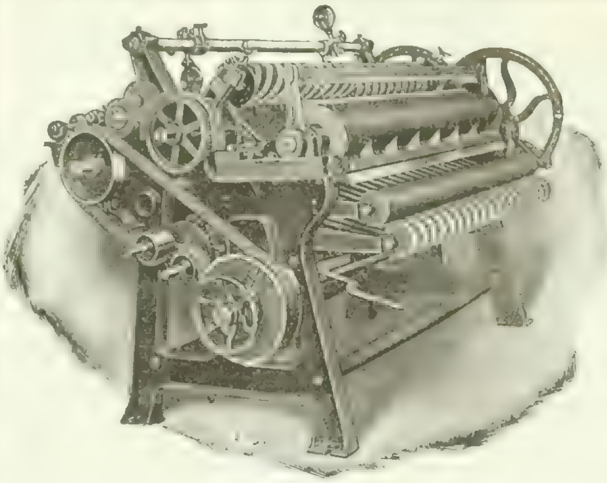

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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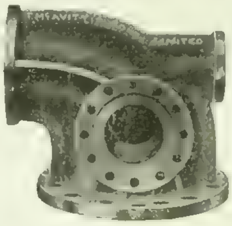

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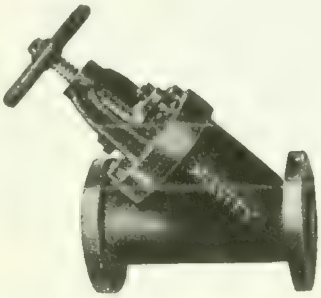

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-:- EDITORIAL -:-

Technical Men Should Write

What we have to say of technical men writing, applies also to practical men. People have often said to us that it is difficult for them to write but we have a notion that it is far more difficult to get people to write. However, once a person has a subject of interest and starts to put his thoughts in words, and the words on paper, he is usually surprised at the success which has attended his effort. Industry, and particularly the pulp and paper industry, has reached a stage of development where the remarkable progress that has been made, can be traced very largely to the contributions through magazine articles and addresses at Technical Association meetings by virtue of which experiences and ideas have been disseminated to the benefit of all concerned, and the progress that is to be made in the future will even more depend upon the interchange of ideas. We have never seen the situation more clearly stated than in an editorial by Harold F. Marshall, advertising manager of Dwight P. Robinson & Co., Inc., which appeared in the last issue of their house organ "The News". Mr. Marshall says:-

> The writing of articles for publication in technical papers as well as in popular journals offers an opportunity worth the most serious consideration by every member of our organization. Our work, in both design and construction, is so varied that the material which can be developed into articles of real interest is almost inexhaustible.
>
> The benefit to be derived from this activity is twofold. On the one hand, it is perhaps the most valuable publicity that the company can have, next to actual work well done. It is probably not an exaggeration to say that 50 first-class articles developed in the course of a year would be equivalent to not less than $5,000 worth of the most carefully purchased advertising.
>
> In the second place, it offers to the individual member of our organization practically his only means of publicity—his only means of calling the attention of other than his immediate chief to the work that he is doing. Measured on this basis, it should be worth a good deal of "midnight oil" to the young engineer and field man, and should also prove valuable to the older and more highly placed executive.
>
> There is a third factor. It is in the feeling that a writer of an interesting article contributes a tangible bit to the advancement of the general knowledge of his profession.
>
> So much for the value of writing. Now for the difficulties. The main protest will be something along the line of "I can't write" or "I don't like to write." But you don't have to be a writer to write a technical article. Just as the man who wants to build a plant calls us in as engineers, so should the man who has an idea or has had an interesting experience in the solution of a problem of a plant, call in a professional writer to assist him. That assistance constitutes a main function of the advertising department in our organization. It is given official support in this work by a Committee on Technical Articles composed of heads of departments.
>
> The most important and most frequently over looked factor in the preparation of articles has been the point of view of the reader. It is most important that the description of say a chemical plant be written along the lines that appeal most to the chemical engineer and manufacturer. To accomplish this, one must necessarily subordinate the natural instinct to treat it from his own view-point—that of a supervisor of plant design or construction. An article built around the layout of wheel-barrow runs to a concrete mixer has just as distinct reader-interest as the description of a super-power project.

The membership of the Technical Section is constantly growing and the experience of the members is constantly increasing. The combination of these factors together with the fact that the reading of technical literature by mill operators is coming to be more appreciated as a helpful factor in their work should result in a continual stream of good articles of technical, semi-technical, or commercial character for our trade journals and as subjects for papers to be presented and discussed at meetings of our technical organizations. The Executive of the Technical Section some time ago decided that papers presented through the secretary's office for publication should have the same status as papers read before a stated meeting of the section. Such papers would be published in the Pulp and Paper Magazine, under a special heading and would be open for discussion by correspondence. Papers so presented and approved by the Executive would appear in the annual volume of Transactions of the Technical Section.

Members of the Technical Section and other readers of the Pulp and Paper Magazine need not hesitate because they have never written before, nor is it by any means necessary that a man have a college education to put his ideas on paper. Some of the finest thoughts and expressions of thought that we have are by people who never saw a college. Every person writing an article, whether it be fifty words or five thousand will be sure of having it read carefully by sympathetic readers, the majority of whom will envy the person who wrote the article and wish that they could do as well themselves. One need not delay beginning at all nor is it necessary for a person to have a big subject in order to make the beginning. A few pointers on how to strip the pulp from a wet machine and fold the lap is just as important and just as good a subject as a lengthy discussion on free and combined acid in cooking liquor. Our recommendation to our readers is that they study carefully the quotation from Mr. Marshall's editorial and appreciate the advantages that would accrue to them and to their company if they would but sit down and make a start. They can count on the Pulp and Paper Magazine giving them every possible assistance and cooperation.

A ridiculous statement

It must be that the neighborhood of salt water induces the tendency to tell fish stories. A despatch from Cape Breton in the Halifax "Morning Chronicle" recently, stated that "there is every prospect in sight that an unprecedent boom in the pulp industry will prevail in the coming season and for many years to come, as the supply of raw material available in this country has been estimated by engineers who have made a survey of the territory to be up in several million cord figures and there is no fear of the supply becoming exhausted as the second wood crop begins to grow as soon as the first is cut, which in the course of twenty years is of a size fit for pulpwood."

There are doubtless, places in Cape Breton where a spruce tree will attain a diameter of ten inches or more in the course of twenty years, but the chances are that most such places are already converted into farming districts. It is possible to grow a twelve inch tree in less than thirty years in Canada and we have seen a section of such a tree. As a matter of fact, the spruce of Cape Breton is notoriously dense, which indicates, generally, a slow growth and this would be expected from the generally mountainous character of the greater part of the Island. If the correspondent of the "Chronicle" were to penetrate the mountainous country north of the D'or Lakes, he would have difficulty in locating many million cords of wood on the whole Island. The total area of Cape Breton after taking out the area of the lakes is about two and half million acres with probably half a million of this under cultivation.

The despatch goes on to say that the company operating these pulpwood limits has enough wood to maintain two pulp mills for fifty years which would mean, of course, in perpetuity on the basis of reproduction in twenty years. He does not however, state the size of the pulp mill and we should be exceedingly dubious of a chance of recutting an area for good size pulpwood in less than sixty or seventy years on most of the Island tht is now under timber nd accesable to means of transportation.

Learning by Losing Lives

The loss of the two lives on account of the fire in the chipbin of the sulphite Falls Pulp and Paper Co., of Kapuskasing, Ont., last Sunday, teaches a gruesome lesson. Two precious lives and the danger of losing a third is far too high a price to learn the fact that spontaneous combustion in a chip bin is a fire risk and that the ordinary means of access to the bin are inadequate means of escape in case of a fire. From the report of the disaster it would appear that an outside staircase would have permitted the victims to escape, and might also have been the means of getting sufficient water on the fire to have saved a lot of property and to have enabled the mills to keep running, thus, not only saving valuable lives but permitting continued operation with continued work and wages for the other employees of the mill and continued product and profit for the company.

COBWEBS

Members of the Canadian Manufacturers' Association, are showing their appreciation of the value of a thorough study of the subject of *Economies* by establishing a fellowship at McGill University for graduate research in this subject. A fund of $15.000 is being raised so that the income will maintain a fellowship worth $800 a year for the advanced study of what is perhaps the most fundamental subject of business. The C. M. A. is to be congratulated for its initiative in this respect and the Pulp and Paper Magazine wishes the project every success.

CHIPBIN FIRE KILLS TWO

At the new mills of the Spruce Falls Paper Co., at Kapuskasing, Ont., with the thermometer 46 below zero, two men were killed by asphyxiation from a fire in the chip bin over the sulphite digester, on January 7th. The victims of the fire were R. E. Doherty, Superintendent of Power for the Paper Co., and William Shingo, acid maker. The former comes from Ashland, Wis, and the latter from Oshkosh, Wis. Only the heroic effort of Ernest Joanisse saved Stevens from a similar fate. Although burned severely, it is expected that Stevens will recover. The cause of the fire is supposed to be spontaneous combustion in the pit. The bin holding the chips where the fire took place is about 150 feet above the ground.

Only the efficient waterworks system and persistent efforts of the men and women at Kapuskasing, saved the other buildings of the plant. The destruction of the chipbin will cause a temporary suspension of operation of the plant.

COME ALL YE!
TO MONTREAL, JANUARY 23-26

Pulp and Paper Industry in the Past Year

By GEORGE M. McKEE,

President of the Canadian Pulp and Paper Association

At the opening of the year 1922 the situation in the pulp and paper industry was not very cheerful, although there were several factors of promise and encouragement for the coming year. The industry, like most other industries, had been passing through the reaction from the industrial boom of 1919-1920. The bottom of the depression had been reached and the reconstruction period was under way. In the twelve months that have passed since that time, considerable progress has been made and much lost ground recovered. There have been readjustment and economies in operation; high priced materials have been worked off and inventories written down. There have been the desire and the necessity to get down to a solid basis which should serve as a foundation for the gradual return to prosperity which is so freely predicted by careful observers and the pulp and paper industry today is in good shape to take full advantage of the return to better conditions. The year 1922 closes with the pulp and paper industry well on the way to normal and 1923 can be faced with a well founded optimism.

Canada produces a great deal more pulp and paper than her population can use, hence the prosperity of this industry depends greatly upon conditions in other countries, particularly in the United States which is our best customer for these products. In that country conditions are similar to those in Canada and the return to normalcy there has had a good influence upon the situation in this coutry. Our exports to the United States have considerably increased over the exports for the previous year, although the big reductions in prices have scaled down values. As far as quantities are concerned, our exports of pulp were almost double those of the previous year and our newsprint exports were greater by almost 40 per cent.

Financial and general conditions in the Scandinavian countries have also had their effect upon the pulp and paper industry in Canada, as these countries are our competitors in the United States markets chiefly for chemical pulp. The Canadian mills have had to face severe competition from the mills of Scandinavia and Finland. These countries, like ourselves, were badly hit by the slump of 1921 and had large stocks of pulp which they were forced to liquidate with consequent forcing down of prices. We find that for the first nine months of 1922 the imports of sulphite pulp into the United States from Europe amounted to 237,000 tons compared with 71,000 tons in the corresponding nine months of 1921. However, the stocks in those countries are now reduced and as political and economic conditions in Europe tend towards improvement these imports will decline to some extent which will be to the benefit of the Canadian mills.

Improvement has been shown in all lines of the pulp and paper industry in Canada during 1922. Production has been greater than in the previous year by from 10 to 30 per cent. Our output of wrapping-paper was more than double the output last year and our production of newsprint increased by nearly 40 per cent; our exports of book and writing paper gradually increased during the year and while not equal to last year's figures, showed steady progress. The newsprint industry has done best from a production point of view. For various reasons there was in the past year a tremendous increase in the consumption of newsprint paper in the United States and the quantity used broke all records. As Canada supplies about one third of this newsprint our mills have been operating nearly to capacity during the greater part of the year. Taking the Canadian and United States market as a whole the production of newsprint has kept ahead of consumption by only about one per cent. Present indications are that this state of affairs will continue for some time and that Canadian mills will be kept busy during 1923.

The steady decline of prices for pulp and paper which began in 1921 and continued into 1922 showed signs of coming to an end in the fall of 1922 and prices tended to stiffen slightly at that time. Pulp prices increased $5 to $10 per ton and newsprint prices were raised $5 a ton for the first quarter of 1923. This, together, with the increasing demand for business generally gives an optimistic outlook for 1923 and shows justification for the faith that the Canadian manufacturers had in the fundamental soundness of their industry.

The following details of our exports of pulp and paper will serve to show what progress has been made in that direction during the year, and to compare with the year 1921. Quantities are given where possible as the fluctuations in prices rather nullify the inference to be drawn from values.

EXPORTS OF WOOD PULP FROM CANADA
First Eleven Months of 1922

	Mechanical Tons	Sulphite Bleached Tons	Sulphite Unbleached Tons	Sulphate Tons
January	28,608	12,470	11,120	9,807
February	13,222	8,715	10,145	11,437
March	19,525	9,842	14,988	14,415
April	6,448	8,149	8,317	8,162
May	11,912	16,835	11,277	12,575
June	37,556	11,919	21,500	13,109
July	26,873	13,312	24,679	12,887
August	39,758	15,033	17,355	12,658
September	36,968	11,419	28,154	13,503
October	26,435	18,075	18,411	14,088
November	32,961	12,686	26,398	14,546
11 months, 1922 ..	280,266	138,446	192,344	137,187
11 months, 1921 ..	185,954	61,420	107,738	87,498

The figures show the big increases in exports of pulp that took place in 1922 compared with 1921. Mechanical pulp exports increased 51 per cent., bleached sulphite 125 per cent., unbleached sulphite 78 per cent., and sulphate 57 per cent.

The table below gives the exports of various grades of paper for eleven months of the year.

	Newsprint Tons	Kraft Wrapping Tons	Book Paper Cwts.	Bond and Writing Cwts.
January	67,701	1,358	118	250
February	70,729	1,633	1,112	227
March	95,196	1,437	86	202
April	61,452	638	35	563
May	75,783	651	562	1,355
June	86,479	2,185	1,214	859
July	77,004	1,826	6,177	1,574
August	84,023	1,922	6,684	1,301
September	79,557	1,675	4,675	1,840
October	81,552	2,183	6,983	2,298
November	94,532	1,553	2,399	663
11 months, 1922 ..	874,008	17,061	30,045	11,112
11 months, 1921 ..	636,487	5,940	32,200	22,037

Of our exports of mechanical pulp the United States took 163,336 tons, Great Britain 86,403 tons and France

28,565. Our best customer for sulphite pulp was the United States with 252,655 tons out of a total of 330,788 tons, followed by Great Britain, France and Japan in that order. Our exports of sulphate pulp all went to the United States.

It will be seen that our exports of newsprint and wrapping paper are very much ahead of last year's figures for the corresponding period, newsprint being 37 per cent. greater and wrapping paper 187 per cent. greater. Book paper and bond and writing are behind last year's figures due to competition and decline in demand for these classes of paper, but the figures show great improvement during the year and demand is picking up in these lines. For newsprint, our best customer was the United States which took 805,663 tons, followed by Australia with 31,285 tons and New Zealand with 11,315 tons. Book paper went principally to Australia and New Zealand, with Great Britain a poor third. Bond and writing paper also went chiefly to Australia, with Great Britain and New Zealand not far behind. Of Kraft wrapping paper Great Britain took the largest share, followed by Japan and Australia.

Canadian pulpwood exports are naturally a factor in the situation and of this raw material we exported in the first eleven months of 1922, 925,588 cords valued at $9,523,366 compared with 1,047,174 cords valued at $14,137,550 in the corresponding period of 1921. These figures also show the decline in the prices of pulpwood that took place during the year. All the pulpwood was exported to the United States, which relies on Canada for a large amount of pulpwood annually, in order to help out its depleted forest areas.

It has been said previously that quantities give a better idea of the size of the industry than values, owing to the fluctuations which the latter have undergone in the past twelve months. As a big factor in our export trade, however, we might here mention that the total exports of Canadian pulp and paper for the first eleven months of 1922 amounted to $105,624,324 compared with $98,319,087 in the corresponding months of 1921. These amounts were distributed between finished paper and pulp as follows:

	Paper	Pulp	Total
11 months, 1922	$68,203,506	$37,420,818	$105,624,324
11 months, 1921	69,394,795	28,924,292	98,319,087

Thus, in spite of the decline in prices the total value of our exports of pulp and paper increased by $7,305,237 over last year; the value of our pulp exports being greater by $8,496,526 while the value of paper exports was smaller by $1,191,289.

During the year there have been various additions to existing plants and new plants put into operation. The early part of 1923 will see at least four new newsprint machines in operation with others to follow during the year which will increase the capacity of Canadian newsprint mills to over 4,000 tons per day or about one and a quarter million tons per year, a big stride forward from 1913 when our total production for the year was 350,000 tons.

There are also various additions to our producing capacity in pulp and fine papers under construction or planned, which should make the year 1923 one of record production for Canada and show that this industry has established a firm hold in the country and a high place among the factors tending to its prosperity.

PAPER IMPORTS HIGHER

Importations of paper and paper goods into Canada during November had a value of $842,322, compared with $722,254 during November, 1921. During November importations of pulp reached $3,261,758 pounds, with a value of $90,701, compared with 2,932,243 pounds valued at $106,960 during November, 1921.

FIBRE TRUCKS IN THE TEXTILE INDUSTRY

The value of the Fibre Truck to the Textile manufacturing plant is well exemplified in the following data given by the Knit-To-Fit Manufacturing Co., Limited of Montreal, and telling of the successful system they have adopted in the use of the same in their factory.

"We are using the Diamond State Fibre Trucks in running our production on a so-called Truck System. The truck itself is 48 by 24 by 36 inches in measurement, and separated in the centre, forming two compartments of even dimensions, viz: 24 x 24 x 36 inches,

Each truck is started at the Cutting Department, which in our plant, is at the far end of the floor. One compartment only is filled with say from 25 to 50 dozen underwear. The exact contents of each truck are listed on a tag, bearing a running number of the truck and the date when it was started off by the Cutting Department, as for instance,
Truck No. 510.

Started—Nov. 6th.

5 doz. 906 size 36
10 doz. 906 size 38
15 doz. 906 size 40
5 doz. 906 size 42

This tag is tied to the truck, for which purpose we had the truck manufactured put a small hole at both ends of the truck. The truck contents are entered in a recordbook, which keeps track of the movements of the truck from one department to the other until it is finally reported as received in the Stock Room. The tag stays on the truck throughout its trip from station to station; the contents remain in the same truck from start to finish, because each dozen is thrown in the other half of the truck when finished by the operator. To get the next batch of work, the operator pushes the truck to the next station and pulls the new truck in its place beside her.

No department is allowed to accept any incomplete dozen. If there is a shortage in any of the dozen-bundles, it must at once be reported to the Foreman, else the operator passing the incomplete dozen will be held to account for the loss of the missing garment or garments. This has worked out so well that loss of goods in process through carelessness or stealing is entirely eliminated, although this was an evil that we found impossible to check before we used the present Truck system. Through this system we are now in a position to trace instantly any particular batch or dozen of goods on which we may wish to lay out hands for one reason or another. We have at times as many as 10,000 dozen or more goods in process at a time, but our records book will show almost at a glance in which particular truck the sought for merchandise is moving through the manufacturing process, also in which process-department the truck is at that time.

Monthly stock taking of goods in process is by this system reduced to simply checking up the truck numbers in each department with the record book; the goods themselves need not be touched, as the contents of each truck are already on record.

To anybody familiar with the manufacturing of goods similar to such as we make, the benefit of this system will be obvious; it will also be apparent, that a great amount of otherwise unavoidable handling and carrying about of the merchandise is eliminated by it."

Pulp and Paper Mills at Port Arthur and Fort William

(From Fort William Times Jounal)

(Continued from last issue)

THE FORT WILLIAM PULP & PAPER CO.

Wheels will turn in the magnificent $4,000,000 plant of the Fort William Paper Company, Ltd., before Christmas. (The mill made paper Dec. 31).

And when they do an epoch will be marked in the industrial life of the city of Fort William.

On that occasion Fort William will cease to be an exporter of raw and partially finished material. She will become an importer of raw material for an industrial purpose and an exporter of a finished material.

When pulpwood leaves the Fort William plant it will leave it as newsprint in rolls ready to be placed on any modern newspaper press and be used in the publication of newspapers. The first rolls finished are to be used on the Times-Journal rotary press and Fort William people will for the first time in their lives read the news of the world from sheets of newsprint made from trees which only a few weeks or months ago were standing in the forests of our hinterland.

Company Has Its Own Dock

The paper company has a dock from which an average of two cargoes of air-dry pulp have been shipped monthly since the pulp mill section began operations April 30, 1921. This dock will now be used for the reception of raw material to be used with the groundwood pulp in the production of newsprint and the exportation of finished material.

Grew From an Idea

And like all of the marvelous modern development of Canada this epoch-marking event will be the result of a dream, envisioned by somebody years ago. More than one may have imaged the same picture. Of dreams there are no record but in the archives of Fort William's city clerk there is a written record of the proposal which indirectly resulted in the establishment of the plant in which newsprint will be produced ready for use before a new year comes.

Many names appear in the volumes of letter and telegraph files between May 1916 and the spring of 1920 when the formal agreement was entered into by the city and the Fort William Paper company limited. During parts of the time Mr. H. Murphy, then mayor, in behalf of the city was dealing with two or more companies and some of the companies were dealing with more than one city. On one occasion the then negotiating company, and one of the companies directly concerned in the final proposition, were on the verge of closing for a site other than the one actually used and it is largely due to the ability and the alertness of the men who were representing the city in the negotiations, that the company men were taken to the site where its advantages and the advantages offered by this city in respect to power, water and other prime essentials, were successfully impressed upon them. When the company men left the site they said that it was the one they wanted and the one on which they would build.

Then Started Real Work

After that decision was made there has been no loss of effort or waste of time. Adequate limits for a long term of operation had been obtained. In August construction of the groundwood plant for the company was undertaken by the Management Engineering and Development company of Dayton, O., the city which also is the headquarters of the Mead Investment Company, the firm which arranged the preliminary financial details.

Started Building in 1920

Lord Birkenhead, who was a member of the imperial press delegation then touring Canada, cut the first sod and actual work started early in September, 1920. It was a critical period for construction operations but work continued throughout the winter and the plant was put in operation April 30, 1921. Since that time the plant has made a record for continuity of operation. The company weathered a storm in the industry which crippled many of the older established concerns. The paper market went to pieces. In a very short time and with no particular warning prices dropped to about 50 per cent of the peak. It was only by the most efficient operation and expert financing that staggering losses were avoided. Much of the credit for the company's stability during that trying period and its ultimate success is given by his associates to Col. C. H. L. Jones, the actual promoter of the project, the vice-president of the company, and the man responsible for the efficient personnel now in charge of the construction of the paper mill and the operation of the pulp plant. He, as manager of the plants of the Spanish River Pulp and Paper company, the largest producing company in Canada, with which the local company is associated was in touch with the most efficient men in the business and it is said by his associates that he did not favor his own plant in the formation of the new organization. He has always expressed a particular liking for the Fort William proposition and his associates give him much credit for the success obtained. He was here a short time ago inspecting the new plant and the equipment as it was being installed and will be here again to see the plant put in operation and put his "O. K." on the first rolls of paper which are to be used on the Times-Journal press.

Best of Material Used

The building and the equipment are the last word in paper mill construction. Where it was a question between expense and efficiency expense has been disregarded. All of the several departments are housed in massive re-inforced concrete building of two floors 90 feet wide by 350 feet long. The foundation rests on 2,700 concrete driven to an average depth of 28 feet. The first of the concrete piles were driven July 4 last. The incident created much public interest. It was the first time concrete piles were used here. The foundation was specially designed to carry the tremendous weight of the building itself, as well as the tons on tons of high speed machinery. The heaviest weights are the two paper machines which are on the second floor and to the base of which the foundation is carried direct from the mass of concrete underpinning. The building is practically fire-prooof throughout and a complete sprinkling system gives added protection.

Pumps on Basement Floor

In the ground floor room, called basement by men of the paper mill, are the boiler room, stock chests to which pulp is pumped from the adjoining pulpmill, and from which it is sent to the preparatory equipment of the paper mill, and the stock pumps.

$1,000 in Coal Every Day

The boiler room equipment will generate 2,000 horse power of high pressure dry steam in the production of which about $1,000 worth of coal will be used daily. The smoke stack is of re-enforced concrete and towers 134 feet in the air. This steam will drive two 600 horse power Billiss-Morcom engines of superior English design and manufacture. They are remarkably compact for the amount of power developed. They have the widest possible range of speed but at 375 revolutions per minute they will develop the power of 600 horses and turn the paper machines at a speed which will finish a strip of paper 800 feet long and nearly 17 feet wide every minute. The exhaust steam from the cylinders will go the drier rolls where it will take moisture from the paper in process of manufacture and on to the heating system where it will aid in keeping the entire plant warm. It will be used from live, dry, high pressure steam to water and is ready for ice making, if any one wants to make ice from it.

How the Pulp Progresses

One of the new devices, or rather new designs of an old device, will be the "save-all" which has much the appearance of a grandstand at a ball park. Its purpose is to thicken the pulp which goes to the save-all as it arrives first from the pulp making plant. The pulp used in the paper mill will not go through the hydraulic baling presses of the pulp plant but will come to the mill in the wet to pass over the save-all which has been constructed along the wall adjoining the pulp mill. From the save-all the thickened pulp goes to the mixers where it is joined by the sulphite pulp, imported from Spanish River mills, and which has passed through the beaters where it has been mixed with sufficient water to make its consistency similar to that of the thickened pulp. The two are blended in the mixers, the contents of the pulp, when ready for the paper mill, being about 85 per cent ground-wood pulp and about 15 per cent sulphite.

In some mills it is necessary to use about 20 per cent of the sulphite and 80 per cent of the groundwood but the object of perfection in all mills is to reduce the percentage of sulphite and increase the percentage of groundwood.

In the operation of the plant two mixers and four beaters will be used ultimately. The mixers and three of the beaters will be ready for operation when the mill first turns. The other beater will be installed later. From the mixers the nearly ready pulp is forwarded to a final rotary screen from which it is distributed to the Fourdrinier. It threads its way through a series of revolving cylinders of huge dimensions which, heated by steam to high temperatures, smooth and dry the pulp, thereby completing the process of manufacture.

Putting it in Shape for Use

As the paper comes from the machine it is wound in great rolls which are conveyed to the packing room, where as the wide rolls are unwound the paper is cut and carefully rewound on cores in widths suitable for use in newspaper presses.

In one year's operation the Fort William paper mill will spin a web of newsprint paper which would reach around the world at its greatest circumference and form a band 54 feet wide after being trimmed and made ready for use in presses.

The executive personnel of the Fort William Paper Company, Limited, is as follows:

President—Col. Thos. Gibson, Toronto.

Chairman of the board of directors—Geo. H. Mead, Dayton, Ohio.

Vice presidents—G. R. Gray, Col. C. H. L. Jones, and Maj. P. B. Wilson, Sault Ste. Marie, Ont.

Resident manager and treasurer—D. J. Calvert, Fort William.

General superintendent—Wm. Zieman, Fort William.

Paper mill superintendent—Jos. Hubert, Fort William.

Groundwood superintendent—G. W. Dickson, Fort William.

Woods superintendent—W. J. Greer, Fort William.

Accountant—J. D. Young.

PROVINCIAL MILL APPROACHES COMPLETION

(From Fort William Times-Journal)

With, at the present time, one hundred and ninety men on its pay-roll, shortly to be increased, as soon as the paper-making machine commences running in February next, to three hundred men, with never a tie-up, let-up, lock-out or strike to mar its record, the Port Arthur division of the Provincial Paper Mills, limited, is one of the big industries at the head of the lakes.

The plant, as it stands today, just north of the Port Arthur Shipbuilding Company's buildings, represents an outlay of $2,250,000; the pulp mill, which was built in 1918, having cost $1,250,000 and the paper mill, just completed, representing an expenditure of $1,000,000.

Railway spurs, giving access to both the Canadian Pacific and the Canadian National railways, are laid to both mills, and every facility is thus afforded for rapid handling of cars and for speedy switching.

MR. J. H. WELDON,
President, Provincial Paper Mills, Ltd.

Many conveniences are provided for the comfort of the employees, including garages, lockers and wash-rooms. There is also a restaurant for the office staff.

From Wood to Pulp

The pulp mill, so often described in these pages and elsewhere, needs no further story told about it, except to say that the full process of pulp making, from the time the wood enters the slasher mill, through the wood room, by the conveyor into the digestors, through the machine room, into the blow pits and separator rooms, till it comes out into wet slabs, ready for loading into cars, is faithfully gone through.

The digestors are huge affairs, each ninety feet high, with a capacity of sixteen tons each.

The pulp is loaded into cars and shipped to the company's mills at Thorold, Mille Roches, and Georgetown, any overplus being disposed of in Wisconsin.

That is to say, that is what is done with it just now. But in a few weeks' time, you will be able to buy your writing paper in the stores of Fort William and Port Arthur, made from pulpwood grown in this district, for on February 1st of next year the big paper mill will be ready to turn out paper.

35 Tons Paper Daily

The pulp mill has a capacity of fifty tons of pulp a day, and the paper mill is being equipped with a 35 ton capacity paper-making-machine. Accommodation is being provided for two machines, but for the present one only is being installed.

The paper mill was commenced last March. It was built by the Provincial Paper Mills, limited, the general contractor being W. J. Trimble.

H. S. Taylor, Ltd., Montreal, was the designing engineer, and the resident engineer on the job is H. P. Crowell, of Dayton, O.

The building is of two storeys, and the whole mill is 575 feet long and of widths varying from 72 feet to 147 feet.

Seven carloads of machinery are already here, and at the time of this writing the foundation plates were being laid. All told, the installing of one paper machine calls for twenty-five carloads of machinery.

The Buildings

Included in this huge plant are the following buildings: Finishing room 147 feet by 130 feet; machine room, 270 feet by 79 feet; beater room, 65 feet by 79 feet; clay and size building, 38 feet by 79 feet; screen room extension, 109 feet by 65 feet; sub-station, 26 feet by 56 feet; boiler house extension, 47 feet by 52 feet. There is accommodation for four boilers, and at present two only are being installed.

The ground wood mill is of two storeys, and has a dimension of 53 feet by 56 feet.

The paper mill will turn out super-calendar stock, and book paper.

Has Own Wood Camps

In connection with the Port Arthur division of the Provincial Paper Mills, limited, the company has four camps at Sibley township, at Pass Lake, and has also contracts with eight men, making twelve camps in all. In these camps three hundred and fifty men are employed, and this winter 35,000 cords will be taken out. The towing and rafting of the pulpwood logs is done by the tug Maitland and two gasoline 'alligators.'

The following are the officials at the mills: A. G. Pounsford, general manager; A. G. Hinzke, general superintendent; L. F. Knickerbocker, paper mill superintendent; H. M. Lewis, chief engineer; A. G. Scott, chief accountant; H. Stafford, chief electrician; W. Gray, chief timekeeper.

THUNDER BAY PAPER CO.

One of the youngest of the Port Arthur industries which, although in operation for only eight months, is already making arrangements for almost doubling its output, is the Thunder Bay Paper Company.

The plant formerly operated as the Kaministiquia Paper Company, and, after a short existence, was purchased by the Consolidated Water Power and Paper company, Wisconsin Rapids, Wis., in February of the present year. The mill started operations under the new management on April 24, 1922, with an output of thirty-five tons of ground wood pulp a day.

At a cost of $125,000, machinery is now being installed whereby it will be possible to increase this output from thirty-five to sixty tons a day.

A new wood room, of brick construction 60 by 104, is being erected. This wood room contains two 9x30 steel barking drums, manufactured by the Canadian Barking Drum company, Toronto, and provision is made in the new building for sufficient space in which to instal two additional drums in the future.

Other new machinery is an 84-inch wet machine, manufactured by the Port Arthur Shipbuilding Company, and a new hydraulic press, made by the Hydraulic Machinery Company, Montreal.

Three 450 h.p. motors are being replaced by three new 1,000h.p motors, manufactured by the Canadian Westinghouse company, Hamilton, and the small transformers are being replaced by three large ones made by the Westinghouse firm.

To Employ 75 Men

Two new screens are being installed, manufactured by the Sherbrooke Manufacturing Co. Sherbrooke.

All this equipment will make possible the increasing of the present production to between 50 and 60 tons by February 1st of next year.

When the mill addition is finished, the plant will give employment to 75 men. At the present, sixty are working in the mill, and fifty men are employed on construction.

The power used is 3,000 h. p., and the plant has sixteen acres or ground lots or room on which to expand.

The following are the officers of the company: G. M. Mead, president; G. P. Burkey, vice-president and general manager; R. L. Krause, second vice-president; I. P. Witter, treasurer; E. B. Redford, secretary.

The Consolidated Water Power and Paper Company operate newsprint groundwood and sulphite mills at Wisconsin Rapids, Wis., Beiron, Wis., Appleton, Wis., and Stevens Point, Wis.

The output from the local mill is shipped by rail to Wisconsin Rapids.

Local officials of the Thunder Bay Paper company are: F. N. Youngman, manager; Earl Smith, superintendent; William Tonkin, chief clerk; R. L. Kittell, engineer in charge of the new construction.

NEWS PRINT SERVICE BUREAU MEETS JAN. 26

The arrangements for the annual meeting of the Canadian Pulp and Paper association annual meeting are practically completed. The Council are looking for a very large attendance, and for the best meeting in the ten years' history of the Association.

The accounting engineers of the Newsprint Service Bureau have been making a special study of efficient logging cost accounting, and the result of these studies will be made known by Mr. L. W. Campbell, chief accountant of The Laurentide Company, Limited, at a joint meeting of the Woodlands section and the cost accountants of the Bureau, on the morning of Thursday, Jan. 25. It is expected that the meeting will develope great interest among those in the logging departments and those connected with that branch. This will be followed in the afternoon by a conference of the cost accountants and engineers.

The annual meeting of the Newsprint Service Bureau will be held on the afternoon of Friday, Jan. 26, when a very large attendance of American and Canadian newsprint manufacturers is anticipated.

BATHURST BONDS OFFERED

To finance construction of the Bathurst Company's new newsprint mill, $1,500,000 of 6½ per cent. First Mortgage Convertible Sinking Fund Gold Bonds, Series "B", were sold to Royal Securities Corporation, Limited. It is understood that the greater portion of this issue has been placed privately by Royal Securities Corporation with investors in Canada and the United States, and public offering of the balance is being made.

Reports Reflect Kraft Recovery

DRYDEN'S POSITION IMPROVED

The balance sheet of the Dryden Paper Company read at the annual meeting shows a reduction in the deficit for the year ended September 30 of $96 704. This is the second bad year in succession which the company has had, largely through adverse conditions imposed by the present high United States tariff on finished papers and the entrance into the market of large stocks of European concerns which had been accumulated during the war and which under the pressure of the banks had to be liquidated. The addition to the board of F. A. Sabbaton, a director of the Laurentide Company, was announced.

W. A. Black, president, who acted as chairman, said that largely through the installation of new machinery which will provide a more varied output of kraft paper the company has hopes of making a better showing in the coming year. By keeping the mills running, the deficit had been kept to a lower figure than would have been the case if they had been closed.

Mr. Sabbaton, who recently made an inspection of the company's plant, described the timber limits and water power facilities of the company, which he said should prove profitable properties once an adequate market was established. Losses of timber by fire had been light.

W. A. Black, president, said that early in the year the directors had felt that the time had arrived when, as a result of more reasonable prices for building and machinery and evidence of a greater industrial activity, and the consequent improved demand for wrapping and other classes of mercantile papers, the company should extend its operations so as to substantially increase its output of finished products rather than sell so large a proportion of the pulp. They engaged an engineer to design, equip and superintend the necessary additions, which included a water power development of 1,400 horse power at a convenient distance from the main plant, a paper machine capable of making a variety of paper, a groundwood unit to enable the new lines of paper to be made, the necessary beaters and other equipment to round the whole plant off, and the buildings to house the additional equipment. Mr. Black continued that good progress has already been made, and it is expected that within three months the additional capacity of finished products will be available.

J. B. Beveridge, vice-president and managing director, in his report, said that extensive improvement to plant and better operating efficiency have resulted in a substantial reduction in the cost of manufacturing, but as there has sbeen no reduction in the cost of chemicals and coal, it has been impossible to reduce the cost of maintaining pulp to a point which would meet the market price at which it had to be sold.

The demand for the company's other products, building paper and wrapping paper, during the first half of the year, he continued, had been fairly good; sale prices, however, having declined during the year. At the present time only 25 per cent. of the company's output is manufactured into finished products, namely, building paper and wrapping paper. Mr. Beveridge went on to say that during the year there was spent on plant improvements and repairs the sum of $152,033, this amount having been charged to operations, while no allowance was made for depreciation.

He reported that when the new paper machine and other equipment is in operation, the company's production of wrapping and building paper will be increased to 50 tons daily.

WAYAGAMACK MADE PROFIT

The steady improvement that has occurred in the kraft paper industry is strikingly reflected by the annual report of the Wayagamack Pulp & Paper Company Limited, for the fiscal year to November 30, 1922.

One of the outstanding developments of the paper trade in Canada during the past few years has been the quick recovery in the entire industry. In the early stages this was perhaps more evident in newsprint, but latterly there has been almost as great a come-back in other paper lines. As a result of the more favorable conditions the Wayagamack Company was able to report profits for the year of $372,030, as against a loss in the previous year of $156,712. Against this the only actual cash disbursement was represented by the payment of bond interest amounting to $260,854.

The general statement of assets and liabilities also reflects the improvement that has occurred. Current assets amount to $2,455,150, as against current liabilities of $1,070,444, leaving a working capital of $1,384,706.

In the inventories pulpwood, logs, and lumber stand at $879,205, compared with $2,151,297, at the end of the previous year. This would seem to indicate that all surplus amounts of pulpwood and lumber have been used in meeting the increased requirements of the company's customers.

The principal items included in current liabilities are Accounts Payable, $354,465, down from $449,872; Bills Payable, $199,369, compared with $191,629; and Bank Loans, secured, $425,000, down from $1,998,000. In addition notes, which were outstanding to the amount of $300,000, on account of new limits, have been paid off. This has completed all payments on account of additional limits secured and now the company holds outright 2,056 square miles of timber limits. This company has now built up a reserve for depreciation and sinking fund of $1,621,920, as against $1,438,874. The appropriation for the year was $160,000. It is to be noted that this sum has been maintained through the successful years. In addition, there is a general reserve of $1,000,000.

C. R. Whitehead, the president, in his report, states that in view of the disturbed financial conditions of the world, the directors felt it would be some time before their export markets would give a normal return and accordingly operated their plants with the strictest economy.

During the entire year the plants were operated to capacity and the output considerably increased over the previous year. In this way the company has been able to not only maintain, but has further strengthened its position in all foreign markets.

Probably most of the difficulties of trying to live the Christian life arise from attempting to half live it.—*Henry Drummond.*

M. H. S. Taylor, of H. S. Taylor Ltd., was a visitor to Montreal last week.

Determining the Degree of Disintegration of Cellulose

By HELMER ROSCHTER
Kymmene Mills

From Pappers Och. Travarutidskript for Finland. No. 7 April 15, 1922. Translation by Dr. Paul Barthlow for Pulp and Paper Magazine.

In the characterization of cellulose in mill work, its disintegration degree, or its bleaching capacity, is perhaps its most important property, in the mills, where we are engaged, especially in an investigation of cellulose from this point of view. This test is commonly made by means of certain color reactions, which, for example, are produced by chlorinated water, malachite green, bichromate solution, etc. In this manner, it is possible to determine by comparison relatively great differences in cellulose, but it is impossible to present the results of the examination in an objective form, and, in particular, to make other than very rough, inaccurate notes on the cooking chart. Recently we have endeavored to find a method which would render it possible to characterize the degree of disintegration in figures of relative value.

In this direction especially, as regards the bleaching capacity of cellulose, our A. G. Central Laboratory, as is well known, has labored with very great success, and its method of characterizing the bleaching capacity of cellulose may be described as one that fulfills the requirements of a reliable standard method. As a control method of output it is, on the contrary, of less value, nor is it designed for this purpose.

As regards a control method in the mill, the first requirements are simplicity and the rapidity with which it can be carried out. Perfect accuracy is always worth striving for, but a lack of this exactitude seldom does harm, if the method otherwise is practical and gives obviously correct values in gross. The well-known method worked out by Sieber (Zellstoff chemische Abhandlung, Heft 3, 1920) for the determination of the degree of disintegration of cellulose by means of chlorinated lime water should also have found application in our country. As an output control method the Sieber method, however, possesses some weak points, of which may be mentioned here; the unstable nature and varying alkalinity of the analytical fluid (the solution of chlorinated lime), the too great length of time which is requisite for carrying out the determination, and, lastly, the pedantic detail of the determination itself. When we consider besides that the method in no wise always gives values free from error, enough circumstances have been mentioned that speak against Sieber's method.

In case the chlorinated water is allowed to act on the cellulose for a short time only, as, for example, an hour by the Sieber method, the course of the reaction consists merely of a process of oxidation. The greatest part of the chlorine will oxidize away the non-cellulose substances, and be used up in this way, and the less the cellulose is disintegrated, the more chlorine is required in a certain time for this oxidation. Instead of chlorine any other oxidizing agent may be used, which has no action worth mentioning on pure cellulose. Max Renker employed acidified potassium permanganate for the quantitative determination of cellulose (Neber Bestimmings methoden der Zellulose). We can indeed determine the acids obtained in a certain interval from the solution of potassium permanganate, and in this way reach a relative number as a measure of the degree of distintegration of cellulose. The degree of disintegration of cellulose however, is directly dependent upon the quantity of acids absorbed in a certain time, but also upon the rapidity of the process whereby the acids are absorbed. From this last mentioned circumstance the author proceeded to work out a rapid method of control of the disintegration.

Thus if a certain quantity of the solution of potassium permanganate is allowed to act upon a measured amount of cellulose, the rapidity of the reaction can be calculated in seconds, up to a moment when the whole quantity of potassium permanganate is used, and the violet-red color of the solution becomes colorless, yellowish, or yellowish-brown. Upon grounds of previous investigations it can be said that the quickness of the reaction accurately corresponds to the degree of disintegration of cellulose. A 0.01 n solution of potassium permangante has proved best for the purpose; a solution which shortly before its use has been acidified with sulphuric acid, (an acidified permanganate solution previously made is not stable), and in such quantity that the concentration is about 2½ per cent.

Of air-dried cellulose, 2 grams, shredded fine, and, again, a moist mass of 6 grams, rolled into a ball in the hand, are weighed off on ordinary apothecary scales with shell receptacles. This is the most practical method of weighing. Into a 300-400 g. tube of colorless glass, with ground stopper, 80 c.c. of the 0.01 n potassium permanganate solution are poured and then acidified with 1.6 c.c. of normal sulphuric acid.

The cellulose, weighed off, and made into a ball, is forced into the tube, the stopper inserted, while a stop watch measuring seconds is set in motion. It is self-evident that this operation must be performed quickly. Hereupon the tube must be shaken gently and regularly in one hand, while a watch is held in the other. If the shaking is stopped for a few moments, while the tube is inclined slightly, so that the solution separates from the mass, it can be determined whether the solution is still violet or not. The moment, when the color changes from a red-violet into a colorless, yellow or yellowish-brown, is registered by the watch.

The color change can be most accurately determined, if the clear solution is submitted to a cross light. Since the time of the reaction is strongly influenced by the temperature, the temperature of the permanganate solution must be measured in the determination. As a result of a series of these determinations, carried out with sulphite cellulose cooked with direct steam, but which had varying degrees of distintegration, it was established that the time of decolorization of the permanganate solution at 20 c. is, for

	Seconds
Easy bleaching	70
Hard bleached	50-70
Medium hard	35-50
Ordinary hard	25-35
Very hard	25

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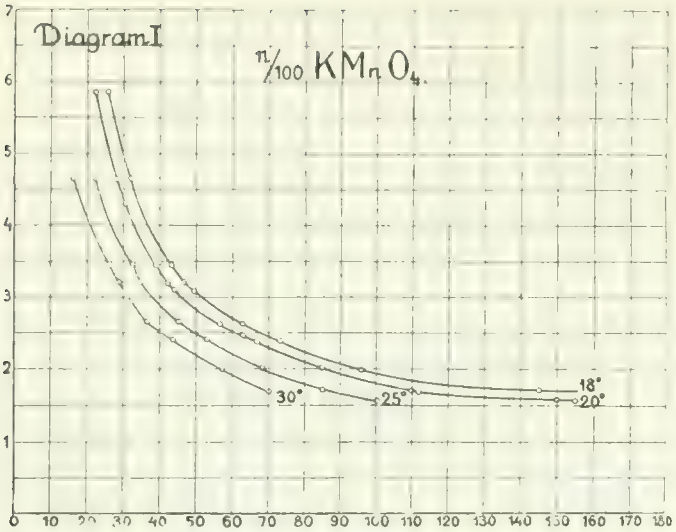
* Read at the meeting of Sulphite Pulp Technicians at the Central Laboratory in Abo, February 18, 1922.



Similarly the time of decolorization of the same cellulose at ordinary temperatures and the chlorine numbers, according to Sieber, were determined at + 20° C. for the purpose of comparison. In Diagram I the times of decolorization are shown as abscissae and chlorine numbers as odinates for 18°, 40°, 25° and 30° C.

The numbers determined for different pulps at the same temperature lie on a curve which runs asympthotically near to both lines of coordinate numerals.

By the aid of the curves it is easy to determine the chlorine numbers at ordinary temperatures in the case of any given pulp. The relation between the time of decolorization and the chlorine numbers becomes still clearer in the following table:

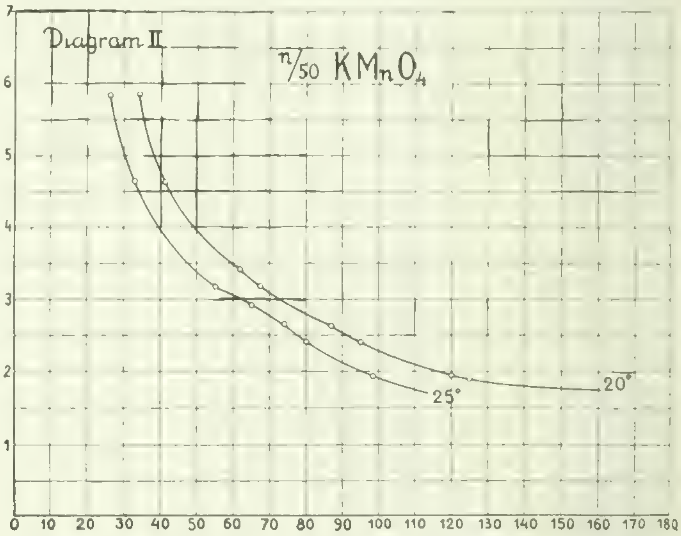
Time of decolorization in seconds	Degree of disintegration of pulps in numbers of chlorine used (Sieber numbers) when decolorization at following temp. with 0.01n $KMnO_4$ has taken place.			
	18°	20°	25°	30°
20		6.30	5.00	4.20
25	5.85	5.25	4.25	3.55
30	4.90	4.30	3.60	3.15
35	4.20	3.75	3.20	2.80
40	3.70	3.40	2.90	2.55
45	3.30	3.10	2.70	2.35
50	3.05	2.85	2.50	2.20
55	2.85	2.70	2.35	2.05
60	2.70	2.55	2.20	1.95
65	2.55	2.40	2.10	1.80
70	2.45	2.30	2.00	1.70
75	2.30	2.20	1.90	—
80	2.25	2.10	1.80	—
85	2.15	2.00	1.75	—
90	2.05	1.95	1.70	—
100	1.95	1.80	1.55	
110	1.85	1.70	—	
150	1.70	1.55	—	

From the sympthotic nature of the curves, it follows that the times of decolorization for very strong cellulose and for cellulose disintegrated as far as possible are uncertain. For strong pulp the decolorization point is indeed distinct, but the time becomes shorter, whereby considerable errors in the determinations are possible. For very completely disintegrated cellulose the decolorization time points again become unreliable, but precisely in consequence of the nature of the curves errors in observation in this case signify less.

The uncertainty, however, may be avoided in the main, if, instead of the $\frac{n}{100}$ permanganate solution, $\frac{n}{50}$ is used for strong pulp, and $\frac{n}{100}$ for easy bleaching. The method is somewhat complicated thereby, but mills which manufacture mostly either easy bleaching, or very strong pulp, are in this way supplied with the means of controlling their operations with the same certainty as other mills. In these cases the same concentration of pulp is employed, but the quantity of sulphuric acid will, in relation to the strength of the permanganate solution, be changed.

The following diagram II shows curves, determined with an $\frac{n}{50}$ solution at different temperatures.

The permanganate solution or method does not yield results of outstanding clarity. In the determination of the time of decolorization variations of 10 per cent are quite possible, but variations carried over into the chlorine numbers are, as a rule, distinctly smaller. What is wanting in accuracy, is counter balanced by the many good points of the method which is adapted for a business control system, namely:



1. The technical simplicity of the determinations.
2. The short time required for each determination.
3. The stability of the analytical reagents.
4. The cheap price of the materials.
5. The possibility of making the determinations during cooking.

So far the method has been tried only with directly cooked sulphite cellulose from three local mills. In every case a gratifying agreement with the corresponding chlorine numbers has been established.

At the suggestion of the committee for the working out of uniform methods of analysis for sulphite cellulose mills of Finland, the permanganate method here described will be compared, in cooperation with the A. G. Control Laboratory, with the method of the Central Laboratory for the determination of the bleaching-chlorine numbers.

Economics of Lighting in Pulp and Paper Mills[1]

By J. H. KURLANDER.

Edison Lamp Works, Harrison, N. J.

A Brief Review of Installation Design

The engineering features of intallation design for paper and pulp mills have been treated so thoroughly in a previous article by the present author* that no effort will be made here to cover this phase of the subject in a comprehensive manner.

However, it may be advisable to review, briefly, the essential requirements of any lighting system for the purpose of placing stress on these points.

Too much emphasis cannot be placed on the careful selection of such accessories as lamps and reflectors.

Incandescent lamps are available for industrial use in sizes ranging from 10 watts to 60 watts in the vacuum, or Mazda B lamps and from 75 watts to 1000 watts in the gas filled, or Mazda C lamps. The Mazda C lamps are more efficient than the Mazda B and the efficiency of the former increases with lamp size. Thus a comparison of a 110 ten volt 100 watt Mazda C lamp with a 110 ten volt 500 watt Mazda C lamp shows that the former emits 1300 lumens of light while the latter emits 9000 lumens. Figured in terms of efficiency, the above shows 13 lumens per watt for the 100 watt lamp as against the 18 lumens per watt for the 500 watt lamp, an increase of 38 per cent. Or, in other words, one 500 watt Mazda C lamp gives about as much light as seven 100 watt Mazda C lamps. The curve in Fig. 1 shows how the efficiency of Mazda C lamps increases with lamp size and from this curve, it is obvious that a great saving in power can be effected by using the higher wattage lamps wherever conditions warrant their use. The conditions necessary for the use of these large lamps are primarily a high ceiling and large work area. A high ceiling is required to enable the lighting units to be hung high, thus reducing the glare and also distributing the light over a large area. A large area is necessary in order to permit the use of a sufficient number of units so that light from a number of units falls on any one point. This makes for ever distribution and diffusion. Diffusion is also obtained by the use of bowl-enameled lamps. Bowl-enameling consists of spraying a dense, white, mineral coating on the lower half of the lamp, which acts to reduce the brilliancy of the lamp and also diffuse the light. The absorption of light due to this enamel is very small.

In addition to lamps, proper reflectors are necessary for the following reasons:

1. To increase the light on the working area.
2. To shield the eyes of the workers from direct glare.
3. To reduce lamp breakage.
4. To reduce dust accumulation on lamps.

For economic reasons, nothing could be better than to standardize on the use of a few carefully chosen units which would meet all requirements for mill lighting. For paper and pulp mills, the following types would take care of all needs:

1. A dome reflector with deep skirt such as the R. L. M. Standard Dome Reflector for general lighting of workrooms.
2. A choice of either the elliptical angle or straight angle reflector for paper making machine and calender lighting.
3. A deep bowl reflector for local lighting, where such is required, and for extremely low hanging heights, such are usually found in basements. This is necessary as otherwise the bright lamp would be in a direct line with the eye and would be decidedly glaring.
4. A good form of semi-direct or totally enclosing glass unit for finishing rooms handling high-grade stock, office lighting, etc.

To the above could possibly be added a small 6-inch reflector for toilets, wash rooms, stair landings, small rooms, etc.

In addition to the proper accessories for the lighting installation, two other points must be considered. One is installation design and the other is the intensity necessary to carry on work efficiently and accurately.

The matter of intallation design was covered in the paper mentioned and as nothing new has been developed (which would tend to affect the data present, no further mention need be made of it here.

The question of the proper intensity or amount of light required on work planes is often open to considerable debate. There is at present no accurate method of predetermining the correct intensity for a specific operation other than that based on experience. Upon the say so of presumably experienced persons often rests the matter of deciding upon a suitable intensity. This is sometimes a stumbling block when trying to convince persons of the desirability of using a higher intensity for particular operations, than that ordinarily used. A method will be outlined later which will indicate approximately a desirable intensity for any operation. Suffice it to say, however, that tables of intensities have been compiled covering a large list of industrial operations, based on experience and observation, that will enable anyone to decide which intensity is proper for any operation.

Revamping Present Installation

It is not to be expected that when a plant or mill wishes to install modern lighting, it will immediately proceed to tear down the present wiring and lighting units and scrap the entire installation. Such a procedure, would, in the majority of cases, prove prohibitive and altogether unnecessary. In some mills, no doubt, only minor changes would be required to bring the installation up to good practice. In others more elaborate changes would be required. Unfortunately there are many where major changes would be necessary to obtain the desired results.

When setting about revampinig an installation it would be well to follow a course of action as outlined below:

1. Make a critical inspection of the systems as to

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[1] Paper read before Connecticut Valley Division of the Superintendents' Association, Hotel Nonotuck, Holyoke, Mass. November 18.

*"Modern Lighting for Pulp and Paper Mills," a paper read at the Spring Convention of the Association of Pulp and Paper Manufacturers, New York, April, 1922

type of wiring, whether open, conduit, etc. This will determine the ease of relocating outlets.

2. Lay out, to scale, on rough floor, plans of the mill, the location of present outlets of wiring. Mark each outlet with the size of lamp it contains and the reflector, if any, employed and approximate hanging height of unit. Also whether the reflector is fit for further use or is to be scrapped.

3. With these plans before you, figure out the intensity on the work plane as would be obtained with the system.

4. Then measure the intensity, in foot candles, actually being obtained, by means of a foot candle meter. This should prove enlightening as to the amount of light being lost, due to lack of cleaning, wrong voltage, etc.

5. Refer to tables of intensities and see what is required for the particular operation in mind. Check this with the calculated figures and what is actually being obtained.

6. Then see what additional outlets are necessary to bring the intensity up to the desired figure.

The last step is the most difficult as it means mostly a cut and try process of adding new outlets to the present system and by so doing it that the sysstem when finished, is fairly symmetrical thus obtaining evenness of distribution.

The question naturally arises as to what material should be scrapped and what should be retained for further use. Certainly all old, battered reflectors which have lost their reflecting properties should be junked. If there is any doubt as to whether the reflecting surface has deteriorated to such an extent as would warrant its being thrown away compare it with a new reflector and determine the extent of its depreciation.

Some classes of reflectors depreciate more rapidly than others. Such reflectors as have painted aluminum or painted enamel surfaces, besides being subject to a rapid temporary depreciation also have a rapid permanent depreciation. By temporary depreciation is meant that the reflecting surfaces easily collects dirt and unless frequently cleaned, soon fails to serve its main purpose of redirecting light to the working plane.

Permanent depreciation is of the nature of peeling and discoloring of the reflecting surface. As distinguished from the types of surfaces mentioned, the porcelain enameled reflectors deteriorate much less rapidly, are easier to clean and are usually more durable because heavy steel is used in their construction.

Another point worth mentioning when any changes in an installation are made, is that of using the right size of lamp in the right reflector. For example, a 100 watt Mazda C lamp should not be used in a reflector designed for a 600 watt Mazda B lamp.. The R. L. M. Standrad Dome Reflector was designed for the use of the Mazda C lamp. Many of the older type shallow dome reflectors were designed for the use of Mazda B lamps. When Mazda C lamps are used in such reflectors they are glaring and the light utilization is low.

110 Volt vs. 220 Volt for Lighting Circuits.

The question of whether to use 110 volts or 220 volts for lighting circuits brings forth some interesting information as to the comparative cost of these two systems. The advantages are entirely with the 110 volt installation for a number of reasons. It is true that a high voltage economizes on copper but the lamp is undoubtedly the most important element of the system. As the economics of lamp selection do not seem to be generally understood, a brief analysis will be made to show the desirableness of the 110 volt lamp over the 220 volt lamp.

It is not possible to make 220 volt lamps which are uniformly as good as 110 volt lamps. The filament of a 220 volt lamp is very much longer and of thinner wire than that of a 110 volt lamp of the same wattage. This results in three things; an increased cost due to the increased labor involved in mounting the filament and also to the smaller demand for these lamps. A lowered efficiency due to larger radiation losses. Increased breakage of filament, due to greater fragility. That these factors are of considerable importance when considering the design of an installation is evidenced by the table below which shows the saving that can be effected by the use of 110 volt lamps in place of 220 volt lamps. This table is worked up on the basis of supplying a factory or mill of 100,000 square feet floor area with an intensity of 4 foot candles.

It is assumed that 300 watt lamps in R. L. M. Standard Dome Reflectors will be used and that the overall efficiency of the installation is 50 per cent.

TYPICAL CALCULATION OF THE SAVING TO BE EFFECTED BY THE USE OF 110 VOLT IN PLACE OF 220 VOLT LAMPS

Voltage	110	220
Wattage	300	300
Lumens	4,900	4,300
Number of Units required	164	186
Net Cost per lamp ($2,500 contract)	$ 1.35	$ 1.60
First cost of lamps	221.80	297 60
Saving on lamps	76.20	
Approximate cost of reflectors, etc.	4.00	4.00
Total cost of reflectors, etc.	656.00	744.00
Saving on first cost of reflectors, etc	88.00	
Total saving	164.20	
Per cent saving	15.70	
Fixed charges:		
Interest at 6% on installation cost	52.64	62.49
Depreciation at 20% on reflectors, etc.	131.20	148.80
Cleaning at $1.20 per unit per year	186.80	223.20
Total Annual fixed cost	$380.84	$434.49
Energy (4,000 hours' operation per year at 1 c kw-hr)	$1,968.00	$2,232.00
Lamp renewals (4,000 hours' operation)	885.60	1,190.40
Total operating cost	3,234.24	3,856.89
Total annual saving	662.65	

This table is given merely as an indication of what can be accomplished in the way of operation economies on the one point alone. No doubt the question arises in some minds as what can be done regarding those mills at present equipped with 220 volt circuits. It is impossible in a paper of this kind to give detailed calculations on this point. Suffice it to say, however, that a proportionate saving can be affected in a number of ways by changing or adapting the existing 220 volt circuits to the use of 110 volt lamps.

Some of these methods involve the use of one of the following:

1. Installing a motor generator set of the required capacity. By balancing the loads, the capacity of this machine need be a small percentage of the total load.

2. By using a balancing coil or auto transformer. Here again the capacity need be but a small fraction of the total load.

3. By using a revolving compensator for modifying a two-wire 220 volt D. C. generator to a three-wire 110-220 volt machine.

It might seem at first thought that it would be extravagant to spend money for additional wiring and machinery merely for the sake of using 110 volt amps but in most cases the return on the money so spent usually pays for the equipment in a very short while. Besides paying for itself it also nets quite a handsome return on the investment.

The Economies of Good Lighting

One of the greatest drawbacks to the use of high intensity lighting in industrial plants has been the lack of sufficient data to show concrete evidence of the benefits which accrue to the users of such systems. It is well enough to talk vaguely of contented workers, greater safety, neater mills, etc., as the results of good lighting, but the plant owner is apt to reason and rightly so, that if his mills were lighted well enough to insure safe working conditions and a fair degree of visual actuity to carry out the plant operations why should he spend more money to secure light which apparently affords no money return. "I can't afford it" is a common excuse for not installing better lighting in many mills.

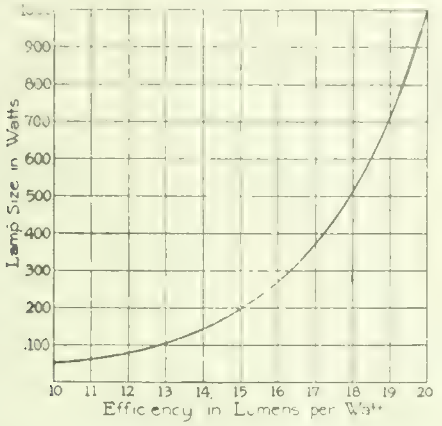

Fig. 1

The principal object of this paper is to show that the money spent for securing light over and above that required for merely safe lighting is money well invested and capable of giving a return far above any sum required to change over to high intensity lighting.

High intensity lighting has in recent years been referred to as Productive Lighting. This, for the simple reason that a higher rate of production is possible under such lighting than under that merely sufficient for safety to workers. A number of tests, which will be discussed later show that production is actually [illegible] reason for this is no doubt of interest to all of us. All of the objects used in the ordinary industrial plant can be placed in one of two general classes. These are stationary objects and moving objects.

In the case of stationary objects, perception of detail is ordinarily of great importance. This can be illustrated by a simple test, making use of a chart, such as that used by opthalmologists called a Snellens' chart. It consists of lines of letters arranged without regard to order, but decreasing in size from top line to bottom line. At a given distance from this which when it is lighted to a given low intensity, a person is able to read down to a certain line of letters. When it is lighted to a higher intensity, however, invariably several additional lines of letters can be read, proving that under a high intensity, a person is able to perceive much finer detail.

In the case of objects in motion, the time element is probably most important. Consider a game of night tennis played on an artificially lighted court. If the lighting system is not properly designed to give high intensity and well distributed light, when the ball passes from a light area to a darker one it apparently gathers speed; conversely, when passing from a darker area to a lighter one, it apparently slows down. Translating this in terms of shop talk, it can be said that moving objects in a well lighted area or plant are more readily perceived than those in a poorly lighted plant. No doubt some of you have played baseball at twilight and have had the unpleasant experience of seeing the ball coming toward you too late to catch it.

There have been a number of experiments carried out by investigators which show that a definite relation exists between speed of vision and intensity. Data can be given showing that in a number of card sorting tests carried out by these investigators, increased speed of operation invariably followed a raising of intensity.

The results of some of these investigations, plotted as curves, are shown in Figure 2.*. They represent the results of a laboratory experiment in which cards bearing a faint triangular figure measuring about ⅛ inch on a side were sorted from other cards, some of which were blank and others having different figures. It

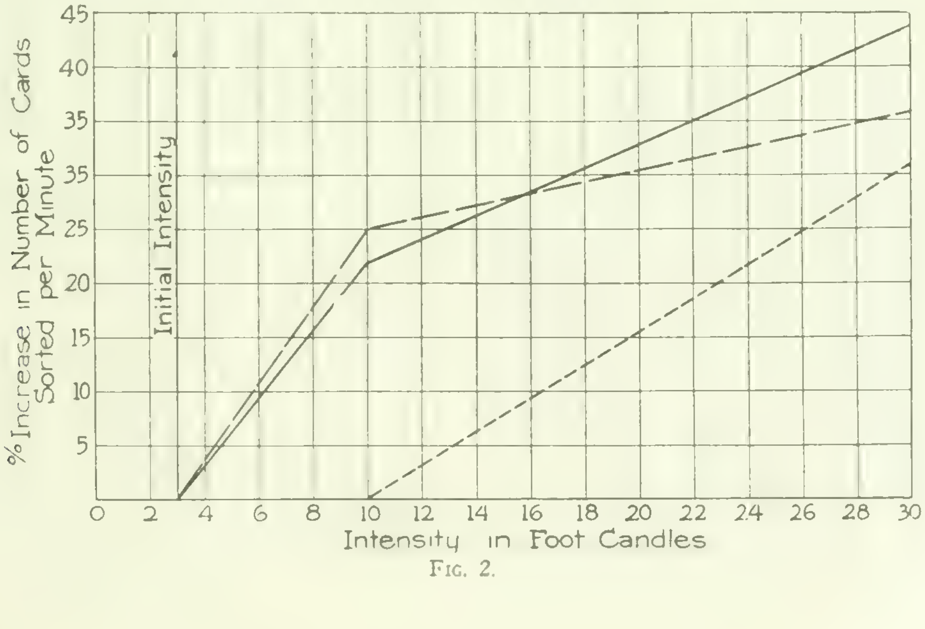

Fig. 2.

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* Engineering Dept., National Lamp Works, Cleveland, Ohio.

will be noted that the curves are constantly rising as the intensity is increased.

However, mere raising of intensity is not sufficient to obtain this increased production. There are some instances on record where the lack of attention to the design of installation nullified the good effects of the high intensity and even acted to cause a falling off of production.

It may be well to mention the results of a test conducted under actual operating conditions in an establishment where sorting is part of the normal operation. In this test addressed envelopes were used and experienced operators sorted these as to geographical districts. Outlets for lighting units were provided where needed and then to secure increases in intensity the smaller units were replaced with larger ones until the largest size unit available was used. Totally enclosing units were used and the hanging height was maintained constant. This last fact is accountable for the ultimate failure of the installation. There was a constant increase in the number of cards sorted per minute until the intensity was raised to 14 foot candles and then a decided drop was noticed. The operators under the 14 foot candle installation complained of the light being "too bright". The lighting units for this particular intensity measured 18 inches in diameter and were hung only 11 feet high. As a result it seemed as if the entire ceiling was covered with lighting units and the installation proved to be very glaring. This point is brought out to show the necessity of coordination the design with the intensity which too often is overlooked. An intensity of 14 foot candles is by no means too much light to supply for work involving such demand on the eye, if the installation is properly designed. It should be remembered the ordinary daylight intensities range from 50 foot candles in office rooms to several thousand foot candles out doors. Investigations of places said to be overlighted, will, if anything, prove that they are **glaringly underlighted.**

It might be mentioned here that card sorting was selected for the first test because of the demand made on the eye and also, because of the nature of the work; increases in production, so to speak, or rather "spread of vision" would show up readily with this class of work, with increases in intensity. The second test, however, as stated before, involved work as ordinarily performed in the normal operation of the establishment.

Increases in production are not confined to laboratory experiments and such work as card sorting. Proportionate increases can also be obtained in practically all operations involving manual effort where a fair degree of eye work is required.

The more eyework, so to speak, the greater will be the return on the money invested in more light. Operations in many other industrial processes are equally susceptible to these increases. That this is so, is proven by the results of tests conducted in a number of shops where accurate records of production were kept before and after high intensity lighting was installed.

The following table contains a digest of these tests:

Productive Lighting Tests

Test No. 1 Press Dept.	Old	1st increase	2nd increase	3rd increase
Intensity in Foot-Candles	0.7	7.0	13.0	25.5
Increase in Production..	-	6.3%	22.5%	24.3%

Test No. 2	Old	New
Intensity in Foot-Candles	3.8	11.4
Increase in Production..		8.5%

Test No. 3 Iron-Pulley Finishing Shop	Old	New
Increase in Production..		35.0%
Intensity in Foot-Candles	0.2	4.8

Test No. 4 Soft Metal Bearing Shop	Old	New
Intensity in Foot-Candles	4.6	12.7
Increase in Production..		15.0%

Test No. 5 Heavy Steel Machine Shop	Old	New
Intensity in Foot-Candles	3.0	11.7
Increase in Production..	—	10.0%

Test No. 6 Carburetor Assembling Shop	Old	New
Intensity in Foot-Candles	2.1	12.5
Increase in Production..	—	12.0%

Test No. 7 Spinning Machines (Textile Mill)	Old	New
Intensity in Foot-Candles	1.5	9.0
Increase in Production..	—	17.0%

Most of the increases in these tests were obtained at an increased cost of approximately 1 or 2 per cent of the pay roll. In other words, if you had a hundred men working for you and then employed one more and this one man increased production by 10 per cent, he would be a rather valuable worker. Why not let lighting do this for you?

Granted that the results of these tests afford proof that a very appreciable increase in production can be obtained by increasing the light under which work is carried on, the next question that naturally arises concerns the expense of obtaining such increases. Can these increases be obtained economically?

Total production can be increased in a number of ways. By employing more men, by using better machines, etc. The point is, however, will the output per man or per unit of cost be increased? If not, then no increase in efficiency has been obtained.

A table of annual cost based on the use of a 100-watt Mazda C lamp per operator per 100 square feet of floor area shows the very small saving in time required to affect the cost of operation. It is assumed that the lamps burn two hours per day, 330 days per year:

Analysis of Operating Cost

Cost of Lamp (List, subject to discount)	$0.80
Cost of enameled steel reflector (list, subject to discount)	2.50
Estimate cost of wiring per outlet	6.00
Total first cost	$9.30
Interest on investment at 6 per cent	0.56
Depreciation on reflector and wiring at 12½ per cent	1.06
Power at 5 cents per Kw-hr.	3.00
Cleaning at 3 cents per cleaning, two per month	.72
Renewal of lamp $\frac{600}{1000}$ x 0.80	0.48
Total	$5.82

Wages for 8 hours per day, 300 days at 70 cents per hour are $1,680.

Ratio of cost of lighting per man to wages.

$$\frac{\$5.82}{1680} = 0.35 \text{ of one per cent.}$$

These figures, which are based on assumed conditions less favorable than ordinarily found, show that if a workman saves three minutes' time per day, due to correct lighting, the entire operating cost of the system is paid for. They do not take into account the much smaller differential between the cost of good and poor illumination. Surely any employee will lose much more time than this under an inadequate system of illumination, when it is necessary to go to an individual lighting unit to read his figures, or to adjust the lamp in order to see his work better.

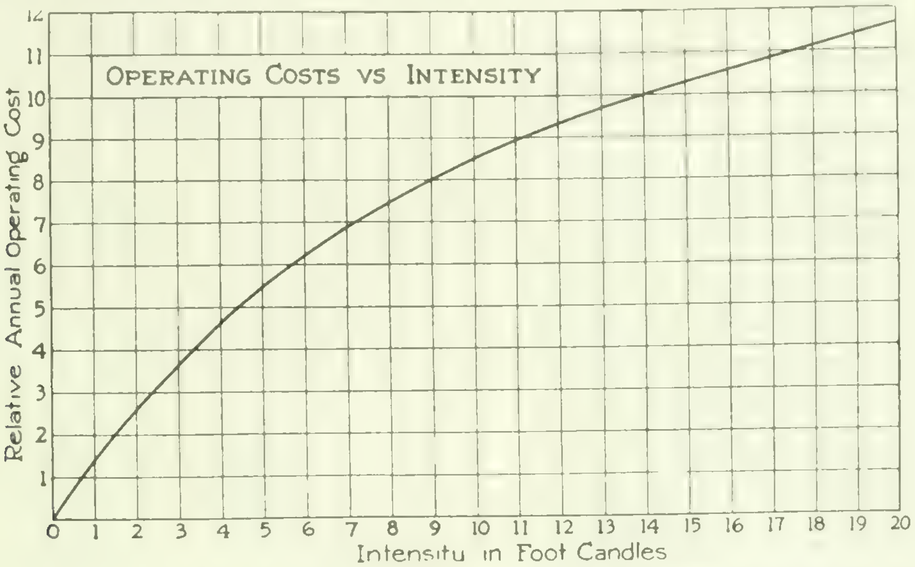

Fig 3

A lighting system, when operating at a high intensity, also operates more efficiently and hence at a lower cost per unit than one under a low intensity. This is shown better by the curve in Fig. 3 which shows the variation of relative operating cost with intensity. As an example, suppose we have a 2 foot candle installation and we wish to treble the intensity making it 6 foot candles. The increase in operating cost will not be trebled but will be 2.4 times the cost of the 2 foot candle installation.

On the curve the 2 foot candle installation is shown as costing 2.6 relative units. The 6 foot candle installation is also shown as costing 6.2 relative units, and the cost of the latter over the former is $\frac{6.2}{2.6}$ or 2.4. Similarly for quadrupling the intensity, the cost is increased but 2.8 times.

So we see that Productive Lighting is something more than a mere catch phrase and is worthy of consideration on the part of the progressive plant managers and superintendents.

There are a number of places in the paper mill where productive lighting could be used to good advantage. The ragroom, machine room, finishing room, and packing and shipping rooms, all afford opportunity for securing the most from this great industrial servant. The finishing room particularly is well suited for such lighting as the operations in this department involve much eyework and it is here that most complaints of eye fatigue originate. The inspection and counting tables can well be compared with the card sorting tests mentioned previously.

Increases due to better lighting do not result from any driving action on the operators as the response to better light is natural and spontaneous.

Better working conditions are also obtained as eye fatigue is greatly reduced and efforts to maintain a cleaner, hence more sanitary mill are facilitated.

HON. HONORE MERCIER WILL SPEAK

The Quebec Forest Protective Association, in which so many pulp and paper firms are interested, will hold its annual convention at the Mount Royal Hotel on January 23, under the presidency of Mr. S. L. de Carteret.

The following is the programme:

Our Forests: Hon. Honoré Mercier, Minister of Lands and Forests, Quebec.

Why is Forest Protection Necessary?

(a) from the Forester's Point of View:—Dr. C. H. Howe, Dean, Faculty of Forestry, University of Toronto.
(b) From the Operator's Point of view?: R. F. Kernan, Manager, Donnacona Paper Co.
(c) From the Public Point of view?: Prof. Stephen Leacock, McGill University.

Discussions

(a) Co-operative Forest Protection:—E. T. Allen Forester, Western Forestyr and Conservation.
(b) Wireless telephony:—Description and demonstration of apparatus as practical and valuable for forest protection: R. B. Adams, U. S. A. Forest service.

ROYAL SECURITIES CO. MAKES APPOINTMENTS

Royal Securities Corporation announces the followign appointments:—Col. A. L. Saunders, from manager, Winnipeg office, to be joint manager, Toronto office; Col. A. F. Culver, from secretary, Winnipeg office, to be manager, Winnipeg office; S. M. C. Beck, from Ottawa representative to be manager, Montreal city sales; F. J. Penfold, to be Ottawa representative; J. C. MacKeen, to be in charge of sub-office at Charlottetown, P. E. I., under the direction of Halifax; J. H. Dumouchel to be representative in the Ottawa Valley; Stanley Stranger, to be in charge of Quebec sub-office, under the direction of Montreal; William Barr and C. H. Link to be assistant secretaries at Montreal office.

British Trade Facilities Bill

Abortive Attempt to Hamper the Newfoundland Paper Industry

(From Our London Correspondent)

London Dec. 16, 1922

As I predicted some time ago an effort would be made by some short sighted busy bodies to keep Canada out of the purview of the British Trades Facilities and Loans (Guarantees) Bill. It is gratifying to announce that one attempt has proved abortive. There are some people today with short memories, who when the Great War ended shouted at all the street corners "Trade within the Empire; "Trade within the Empire;" but when it comes to helping the Empire with a little money they are the first people to stand up and say, "If we help the Empire with money, we are subsidising competition in countries that compete with British industry, i .e. English and Scotch industry."

Now when we have had a sample of these short-sighted inconsistent. busybodies recently when the question of a guarantee in respect of the new paper mill in Newfoundland was raised in the British House of Commons during the committee stage of the Trade Facilities Bill. And bear in mind that Newfoundland's best manhood was welcomed by these busy bodies to fight the war.

Shocking "Bunkum"

Mr. W. M. Pringle, the Liberal Member for Penistone, wanted inserted in the Bill the following amendment: "Provided that no guarantee shall be given in respect of any capital undertaking outside the United Kingdom or for the purchase of articles in connection therewith, where such undertaking would be in competition with any industry which is for the time being suffering from depression in the United Kingdom:"

This is a question which affected not only the paper industry, but the textile and other industries in Canada at the moment.

Mr. Pringle contended that the amendment had been brought to his mind by reason of an application which had been made to the Committee. It affected the papermaking industry in England and as a section of his constituents were concerned in it he must protect their interests. An application was made for a guarantee in respect of new papermaking plant in Newfoundland. He did not know if it had been granted but they had to consider the circumstances in which it was made. First of all that undertaking had been considered by all sorts of people before it came before the Trade Facilities Committee. Endeavours had been made to raise capital for it both in Canada and Newfoundland and they had failed. Similar efforts were made in the City of London. In every case the proposition had been turned down; but when it came to the Trade Facilities Committee on the initiative of Armstrong, Whitworth and Co., then the situation was altered and there was no doubt the application was favorably entertained. The point he wanted to make and it was based on the information he had received was that when this matter was before the Trade Facilities Act Committee while the applicants were heard by that Committee other parties interested were not allowed to appear and to state their case. He thought that the House would agree that then there was a competition of interest, as there was in this case, all those who were affected in any way should be entitled to a hearing. The papermaking industry in England at present was depressed (?) and 5,000 men were out of employment and now was not the time when the credit of the British taxpayer should be used for the purpose of guaranteeing a competing undertaking outside the United Kingdom. The Chancellor of the Exchequer told him that it would be fully two years before the Newfoundland mill would be producing paper and pulp. That might be so, but had they any right to assume that in England in that time the paper industry would be better off? The machinery for the mills would probably give employment in England, but competition would eventually be increased in the paper industry.

The amendment -thanks to the Conservative party being in power—was rejected by 105 votes to 195 against it.

Subsequently, Sir W. Joynson-Hicks asked was not the Act to encourage money to be spent in the United Kingdom for machinery sent abroad. Here was a very important company proposing to establish paper mills in Newfoundland and the matter was of such importance that the Newfoundland Government had already guaranteed a further issue of £2,000,000 of debentures behind the issue to be guaranteed by the Imperial Government. And the only question was whether orders were to be given in England to amount of some £3,500,000 —of which the Government had to guarantee £2,000,000 –whether England should get these orders, or whether they should go to America, or Germany. That was the sole question the Committee had to decide and they naturally came to the conclusion as business men that the money should be guaranteed.

This little debate should be an eye-opener to Canadians. It shows what some of the British papermen think of enterprise in Canada and Newfoundland. There is one bright element in the case and that is none of the money can go to Scandinavia, in which some of the small mills in England are so interested.

Pulp Imports

Figures for the eleven months of pulp are available and a comparison with twelve months in 1913 is interesting—

	1922	1921	1913
Chemical (tons)	314,634	193,144	411,803
Mechanical (tons)	501,090	319,942	566,154
	815,724	513,086	977,957

By the time the 12 months supply reach England from all sources it will be found that the year 1922 will be well up to the imports of 1912 or 1913.

Exports of Paper

The export trade of the British paper industry has got well on the way to pre-war figures as the following eleven months figures show when compared with 12 months in 1913, the difference of which will be made up in December:

	1922	1921	1913
Paper & Boards (tons)	$107,744\frac{3}{8}$	$66,282\frac{1}{2}$	$174,975\frac{1}{2}$

The imports are also heavy, and a noticeable feature is the inceased trade between Canada and the mother country.

Pulp Market

Prices remain unchanged, but there are strong rumors that groundwood is likely to go on a higher level shortly. The chemical market is on the quiet side owing to the holiday feeling, but opinions for the new year are optimistic.

HAND BOOK OF QUALITY STANDARD PAPERS

Under this title the American Writing Paper Co. has issued a most comprehensive catalog of their various papers. Instead of attempting to show samples of each of the various grades the compiler of this book has taken what we believe to be the better course of telling the qualities that a paper should possess for certain purposes and then describing the standard qualities of the papers made and handled by the American Writing Paper Co. It is a most interesting as well as a most useful and serviceable volume.

PULP AND PAPER NEWS

The Beaver Wood Fibre Company, Limited, at Thorold, Ont., has commenced to operate the old Foley mill in that town after two years' cessation from activity, and will manufacture groundwood pulp for use in the Beaver Board Company's plant in Thorold. George Robertson is the general superintendent. The head office of the Beaver Fibre Company is at Thorold and they have wood preparing plants at Charlton and Frederickhouse, Ont., and board mill at Tonawanda, N. Y. They have a groundwood capacity of 250 tons air dry weight per day: board 180 tons air dry weight, of machine capacity per day.

A cablegram received at the head office of the Provincial Paper Mills Toronto, last week, announced the arrival in Australia of their Montreal manager, William German.

The Allen Paper Company, Limited, 105 Simcoe Street, Toronto, have just issued a very attractively gotten up price list done in buff-colored stock and excellently printed.

To carry on business as printers, publishers, map makers, manufacturers of wallpapers etc, Rolph R. Corson, Limited, has been incorporated with an Ontario charter and with head office at Toronto. The authorized capital of the company is $500,000 and among the incorporators are T. S. Elmore, H. R. Moses and John Rigby.

A. P. Costigane, engineer for the Ontario Pulp and Paper Makers' Safety Association, has sent out to the pulp and paper mills an attractively gotten up display announcement in two colors of the accident prevention competition for 1923. The hanger contains a reproduction of the silver mounted shield, two of which are to be given as trophies, together with two commemoration silk Canadian flags. As usual the mills are divided into two classes. A, mills employing 200 people and up, and B, all other mills, and employees are strongly appealed to help their mill win a shield and flag by doing all possible to prevent accidents to themselves and to their fellow employees.

This year's calendars put out by the Ontario Pulp and Paper Makers Safety Association, 208 King Street West, Toronto, through the organization's engineer, A. P. Costigane contain the usual strong pictorial appeals to employees of pulp and paper mills to watch their step in the prevention of accidents. Although on a less pretensious scale than those of last year, the calendars are both attractive and strikingly effective.

A. G. Slaght, of Toronto, in an adress delivered recently before the Kiwanis Club in that city, said that the extension of the Temiskaming & Northern Ontario Railway from Cochrane to James Bay would be a paying investment. This line of 185 miles is being built by the Ontario Government at an ultimate cost of $12,000,000. Water power potentially of 500,000 h.p. will be tapped as well as a country rich in pulpwood, timber, precious metals etc. Mr. Slaght made the declaration that the pulp and paper resources along the new route justified the building of the railway and said that several large plants would be established in the north as a result of the new country which is being opened up.

The Strathcona Paper Company, Limited, at Strathcona, Ont., who are manufacturers of all grades of boxboard, building and wrapping papers, state that they believe 1923 will be a good one and the outlook for building is bright. Prices for sheathing papers will, they think, remain about the same. The company are now putting their beater room and boiler rooms into shape so that they will run both machines during the present year.

A despatch from Edmonton states that provided freight rates can be obtained over the E. D. and B. C. Railway which will allow them to compete with other plants in the West, Foley, Welsh & Stewart will erect a pulp mill valued at $3,000,000 in the Grande Prairie country. Frederick Chase, field manager for the big timber interests of the big contracting firm, is in Edmonton now from the North and brought the foregoing information. He states that if timber rights which they are seeking in the country are granted, the company will erect mills capable of shipping out 5,000 cars of pulp per year, while the enterprise would give employment to approximately 1,000 men. No details of the scheme have as yet been announced.

It is announced in Toronto that the option given to L. M. Appleford to purchase the majority holding of shares in the Appleford Counter Check Book Company, Limited, expired Dec. 30, 1922 and was not renewed. At the annual meeting of shareholders in Hamilton on Jan. 3rd, Mr. Appleford resigned his position as President and Manager, having sold his interest in the Company.

A large truck conveying two and a half tons of paper from the Georgetown mills to Toronto slipped on the ice and went into the ditch a few days ago about four miles north of Brampton. Fortunately the driver was not hurt and the truck and its load were got back onto the road again with considerable difficulty.

The Book and Writing Section of the Canadian Pulp and Paper Association at its last meeting passed a resolution of condolence to the relatives of the late Alex. Buntin, head of the Buntin Reid Company, Toronto, in which the popular paper man's death was deeply deplored and sympathy extended to relatives and friends. The resolution referred to Mr. Buntin as a leading figure in the paper trade and described him as a man of integrity, honor and esteem. The Toronto members of the Canadian Paper Trade Association also passed a similar resolution.

Negotiations between the Great Lakes Pulp and Paper Company and the Ontario Government are still proceeding at Toronto. A suggested draft agreement is to be submitted to A. M. Alstead, principal of the Company, for his approval in a few days. If the Government and the company reach an understanding in this conference, the agreement will then go before the Provincial Hydro Commission. Mr. Alstead was called to Toronto by the Government to consider this last product of the week's negotiations.

Mr. S. Rodier, of the Rolland Paper Co., Ltd., Montreal, who met with a serious automobile accident, has sufficiently recovered to be about again. It will be, however, a little time yet before he can attend to business.

For this time of the year, the Eastern lumber trade is very satisfactory. Prices, especially of spruce, have advanced, and are breeding firm, due principally to a shortage of dry stock. There is very indication of a heavy cut this season, with logging costs on a higher

UNITED STATES NOTES

Writing for the annual financial review of the New York Commercial last week, Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association, foresees increased orders for paper of all grades during the early months of the present year, with general business conditions so favorable that the paper manufacturers of the country are anticipating an active prosperous market lasting at least through the year, and possibly for many months following. "The only question as to the future," Dr. Baker states, "is not whether there will be prosperity, but how long this prosperity will continue, whether later than 1923 or not. This question is felt by the paper industry to depend not on American conditions, but on world finance. Present prosperity is existing in spite of the difficult situation abroad, and any steps that may be taken to rehabilitate the world's finances will mean, the paper manufacturers feel, an extension indefinitely of the activity which is anticipated during the coming year, an activity which will be due to domestic conditions alone."

Touching on the 1922 production of paper, Dr. Baker says that a normal year will be shown when the figures are all compiled. Newsprint, he finds as the result of preliminary surveys, led the list, with a production for 1922 some 13 per cent in excess even of the unparralled record of 1920. The fine papers have been in great demand and the usual seasonal dullness of the last months of the year has been felt in lesser degree than usual. Book paper is in great demand, due to heavy magazine advertising, and some mills are far behind on orders. Specialties are in a fairly good position, but boxboard is not now up to normal. The rush of demand for boxes for the holiday trade, and for general merchandise, following a long period of light demand, resulted in a heavy volume of orders several months ago, but the demand has fallen off since the holiday rush ended. Toilet paper and boxboard can be classed as the only sub-normal groups of the entire industry.

Dr. Baker notes the fact that the paper industry, realizing that future prospects are dependent largely upon world finance, is turning more and more toward the export markets, as a balance wheel to stabilize the entire industry, particularly in periods of low domestic activity. The American paper manufacturers have not gone into the foreign markets to the extent found among European mills, but South America is ready and anxious to have the American product. Export conditions are improving, from the standpoint of the American manufacturer, and the development of a good volume of foreign business cannot but serve to keep the mills active, when the domestic demand shows symptoms of falling off. This outline of the future, says Dr. Baker, does not involve any hint of what the future price trend may be, for prices will follow the prices of raw materials, which are now increasing to the paper manufacturer. The mills have made paper at a loss for month after month to maintain their mill organizations.

Summarizing production of newsprint paper in the United States and Canada during the first ten months of 1922, R. S. Kellogg, Secretary of the News Print Service Bureau, shows that there was a 25 per cent. greater output for this period of 1922 than for the similar period of the preceeding year. Shipments from the mills increased 26 per cent during the same time and stocks on hand at the mills on October 31, 1922, were 7 per cent less than a year earlier and amounted to only three and a half days' maximum production. According to present indications, says Mr. Kellogg, the total production of newsprint paper in 1922 will go somewhat beyond 2,500,000 tons, or about 120,000 tons more than during the previous record-breaking year of 1920. The increased consumption has been due partly to increased advertising volume over 1921 and partly to the printing of larger paper with increased circulations. Mr. Kellogg supplies figures on imports of newsprint paper from Europe since September 1, 1920 the month during which the first German paper arrived. He says these importations have totalled 257,000 tons. Of this total, 80,000 tons have come from Germany, 94,000 from Sweden, 44,000 from Finland, 32,000 from Norway and 7,000 tons from other European sources. The average for the entire 25 months has thus been 10,000 tons a month, but the volume has been by no means steady.

The Crane family of Dalton, Mass., which started in the paper mill business in 1801 have become incorporated under the laws of Massachusetts as the firm, Crane & Co., Inc. The new organization is to take over the Government note and bond papers are made. The capitalization of the new company is set at $3,000,000.

The Hopper Paper Company, a new Illinois corporation, recently organized with a capital stock of $500,000, has purchased the paper mill at Taylorville, Ill. built by the E-Z. Opener Bag Company. The plant, which has a capacity of about 20 tons a day, will turn out tablets, envelopes and papeteries.

Contingent upon an appropriation which has been asked of Congress by the Tariff Commission, the commission may add a paper expert to its staff. The additional appropriation, amounting to $250,000 for the present fiscal year ending June 30, 1923, is needed because of the new work devolving upon the commission through the passage of the present tariff law.

Harry S. Lewis, president and general manager of the J. P. Lewis Company, Inc., has been reappointed by Nathan L. Miller, retiring Governor of New York, as a member of the Black River Regulating District.

A new organization, styled the United States Pulp Producers' Association, has been formed and began to function January 1, 1923. This association is a development from, and takes the place of, the old Pulp Manufacturers' Association. T. W. Ross, the Hummel-Ross Fibre Corporation is president. The secretary-treasurer is O. M. Porter.

The Wax Paper Manufacturers' Association will meet in convention at the Congress Hotel, Chicago, on Thursday and Friday of this week.

Pulp & Paper Week--Montreal, January 23-26

The Markets

CANADIAN TRADE CONDITIONS

Montreal, January 9. — Conditions in the local paper trade are fairly good. Now that the holiday season is over, business is settling down to somewhere near normal lines, the public is ordering more freely, and in turn the jobbers are inclined to stock up in freer fashion. The general outlook may be considered satisfactory, as trade is expected to be on a steady basis, with the demand broadening. In certain directions, notably in the higher grades of paper, there is still a dull market, the public buying being mainly of descriptions selling at the lower range of values.

The mills report a fair number of orders, with certain manufacturers running up to near capacity. This is due in part to export business, which is being well maintained, despite considerable competition.

The demand for newsprint continues very strong. The recent announcement regarding the expansion of manufacturing facilities has naturally given rise to discussions as to whether Canadian mills will not in the near future be producing more newsprint than can be readily absorbed, leading to very active competition and a break in prices. This would, of course, be a calamity for the industry generally, particularly in view of the position newsprint holds in relation to Canadian export trade. There are those who incline to the opinion that Canadian mills are forcing the pace too strongly, but on the other hand, there is the fact that the expansion, from time to time, has been justified by continuous increases in the demand. It is admitted that other markets will have to be found for the output resulting from the proposed additional equipment. It remains to be seen whether we shall secure an even greater share of the American demand owing to the favorable situation of this country in the matter of raw materials and cheap water power. It is significant that the largest program of expansion is by Price Brothers, the directors of which are regarded as men who take a long view of the situation and are not given to hazardous enterprises. It is quite possible that their action and the fact that a considerable amount of new tonnage will come on the market this year and in 1924 will have a deterrent effect as regards some propects new mills.

Trade in other section of paper has been steady. The call for bonds, ledgers, and writings is moderate, without any special features. Wrappings continue to be well bought. Boards are in fair demand with prospects good for more business. Tissues and toilets are being freely ordered.

In the pulp market, groundwood is still in fair demand, but prices are inclined to ease off. Recent rains have improved the water situation, but it is still of such a character as to have little influence on production and prices. Bleached sulphite is more active, and the recent lull in orders has given way to better buying. Prices remain firm. Sulphite is a fairly good market. It is reported that the Robert interests who recent acquired the Carillon water powers have had under consideration the erection of a pulp mill, the idea being that cheap electrical power will be a strong factor in producing pulp on an economical basis.

Although the open weather in the fall greatly aided operations in the cutting of pulpwood, this has been to a certain extent offset by the insufficient fall of snow in certain parts of Quebec, interfering with the hauling of logs.

Toronto Market News

The first month of the new year appears to have opened up fairly well in pulp and paper circles considering the dull period which invariably exists at this time. Although the jobbers report only sales of small dimensions they say, in many cases, that business is better than they expected and that while few big orders are being booked the small ones are building fairly large, and the general outlook for trade is good. Except where affected by repairs and inventory-taking the manufacturing plants are all busy. Book paper mills in Ontario are all running pretty much to capacity and so are the manufacturers of tissues and toilets and other light weight papers. Orders are in hand for these lines for somes weeks ahead and sufficient other business is in sight to warrant the belief that the general demand is not only going to keep up but substantially increase. Prices in all lines of papers remain firm and the year has opened with no very material adverse conditions to hamper the expansion and development that is generally looked for during the early months of 1923.

PULPWOOD.— The market for pulpwood is stabilized and in a generally satisfactory position. Ontario dealers report that some mills are buying again but in no great quantity. Those who are buying wood are only out to get moderate supplies in the next few months. For the most part the mills have large supplies on hand some of them sufficient to put them through the year. The market generally is firmer than it was last year and there is no likelihood of prices changing until spring. Those existing now were fixed last summer. What movement there is in spruce, balsam and poplar. There is a feeling among those supplying wood, back in the bush that they are going to get the same high prices that prevailed last summer but the contractors say that this will not likely come to pass and that there will be only a gradual and healthy increase in prices as the season advances. Contractors in Ontario are beginning to ship their last summer's work.

PULP.— "Bleached pulp is firm, natural sulphite slightly less firm and ground wood is very firm" about describes the pulp situation as far as can be gleaned from well-informed sources in Ontario. The demand for the cheaper grades of natural sulphite has fallen off somewhat which is accounted for largely by the fact that many plants are now in the period of stock-taking. Generally, however, prices are holding firm and the outlook for business is reported to be very good. Groundwood continues to more than hold its own and there is a good call for it. Bleached sulphite is quoted at $90.00 to $100; unbleached at $57.00 to $70.00; sulphate, $70.00 and groundwood at from $44.00 to $47.00. I tis known that some transactions in groundwood have been put through at slightly higher prices than those quoted above.

TISSUES AND TOILETS.— Manufacturers report well-sustained business and the jobbers report but little falling off in orders as the result of the general lull after the Christmas and New Year seasons. In view of the higher prices for pulp and various other raw materials no price changes are anticipated for some time to come and it is a safe assumption that there will be no downward revision at any rate. Onion paper is meeting with a fair demand, there being an increasing call for it for manifolding and writing pad purposes.

TAG MANILA. The upward tendency of most lines of paper was shown last week by a jump in the price of tag manila by about twenty per cent. The new long jobbers' price list now quotes the cheaper grade tag manila at $9.40 per one hundred pounds and the better grades at $13.30, f.o.b. mill. The indication appears to be that most papers in which ground wood is used are liable for an increase.

RAG AND PAPER STOCKS. Toronto rag and paper stock dealers are basing their quotations on those prevailing in the United States and mills appear loth to pay the prices asked. It is stated that United States brokers are in the Canadian market offering $4.00 a ton more for mixed papers than the Canadian mills are offering. The rag stock market is beginning to open up nicely and there is a fair enquiry for general lines. The market in both the rag and paper stock, however, is generally unsettled with a strong upward tendency. Local firms report that they are selling rag and paper stocks to points as far afield as Indianapolis, paying freight and making a better profit than can be done in doing business locally.

CARD BOARDS.— A revision of prices of coated card boards, translucent bristols and railroad board took place last week when a few lines were reduced about ten per cent. Several of the lines, however, remain unaltered in price.

COATED PAPER.— The paper coating mills report that they are fairly busy working on current orders but not very much has been booked ahead. The scarcity of casein is causing considerable concern in the coating paper industry and it is stated that between the scarcity and the extremely high price it is almost impossible to get sufficient supplies. It is believed that the raw stock situation and other features of the situation portend an early advance in the price of coated paper.

BOOKS, BONDS AND WRITINGS.— Jobbers in these lines report the year as opening up rather well, although generally speaking business was quiet for the first week in January. However the travellers are now out again and the prospects for fair business during the last half of the month appear to be good. Book paper mills are still busy and have orders on hand for a considerable period ahead.

NEW YORK MARKETS

New York, January 6 — (Special Correspondence)— Developments in the raw materials of which paper is manufactured have provided the outstanding features of the markets in New York this week. There have been further sharp advances in prices of old cotton rags and waste paper, and the wood pulp situation appears to be showing renewed vigor though no change of note has occurred in pulp values. Demand for raw material of various kinds would indicate that either paper mills are consuming large quantities of stock at present, or that there is somewhat of a scarcity of those grades of material chiefly wanted. It is rather unusual for prices of papermaking raw stock to be advancing at just this time of the year, but this is the case at the moment, and the extent of the price movement during the past few days is such as to make it of real importance to the industry.

There is a good steady business transpiring in paper of nearly all kinds. The bulky descriptions, such as newsprint and book paper, are moving in exceptionally large amounts; if anything, there is as good or broader movement than during the pre-holiday period, and everything would seem to point to demand for printing papers of all kinds holding up well for some months to come. The holidays have of course served to slow down demand somewhat for fine papers, and for box boards and some kinds of tissue papers, but this is a seasonal condition and one which is not likely to last. Big business in the pre-Christmas season greatly reduced stocks of these kinds of paper, and it is obvious that consumers and jobbers will soon find it necessary or advisable to resume buying on a wider scale to replenish their supplies.

Newsprint continues in a strong market position. Reports say that practically every mill in the United States has its entire output for the next few months sold, and it is generally conceded that spot supplies of newsprint, either in rolls or in sheets, are far from large. In the past several years, when business conditions were unsettled, newspaper publishers were hesitant about entering commitments covering their requirements of newsprint when the first of the year came around, many choosing to trust to open market buying to fill a large part of their paper needs. This year, however, there has been no perceptible reluctance on the part of publishers to contract for newsprint. Instead, most publishers have gladly placed contracts, not only for the great bulk of their requirements for some months ahead but in a good many cases for extra tonnage, evidently feeling that paper prices are fully stabilized and that they would gain nothing by holding off in buying. The result is that newsprint manufacturers have started the year with contracts on their books absorbing virtually all the paper they are likely to produce over the major portion of 1923. The market consequently is strong, with prices holding firm at the new basis effective on January 1, and with outside buyers finding it no easy matter to locate newsprint for spot shipment.

Book papers are marked by a steady increase in demand and prices rule firm. Mills in the East, and enjoying a small freight rate to New York are quoting machine finished book at about 7 cents a pound f.o.b. this city, with down to 6.75 cents mentioned in some quarters, but manufacturers out West want about 7.50 cents for this kind of book paper delivered New York. Coated book paper is strongly quoted, with the trend of prices distinctly upward.

No improvement of note has yet occurred in box boards. Boards for the folding and corrugated box industries are inactive and steady demand, but set-up box manufacturers are buying board in small amounts, so that chip and news board are in a quieter market position than other descriptions. The rising trend of waste paper prices nevertheless makes for a firm price position of the latter kinds of board, and eastern mills are generally quoting at least $52.50 a ton delivered New York for plain chip and from $55 a ton upward for news board.

Demand for wrapping paper holds up fairly well though there has been some little recession recently. Manufacturers with few exceptions have enough orders on file to keep them busy for a time, and quotations are fully maintained. No. 1 domestic kraft wrapping is quoted at an average of 7.25 cents per pound f.o.b. New York, with prices a quarter of a cent on either side of this price heard.

GROUND WOOD. While some members of the trade are disposed to describe the market for ground wood as comparatively quiet, it is plainly evident that mechanical pulp is scarcely to be had at reductions in price. If anything, producers seem inclined to ask higher prices. There have been reports to the effect that domestic ground wood has been sold at $42 and $43 a ton at grinding plants — even beyond these figures has been mentioned in out of the way cases — and proof is not wanting that about the lowest at which sizeable quantities of ground wood of good quality can be bought is $40 f.o.b. grinding mills. Demand is of fairly broad scope. Newsprint manufacturers show pronounced interest and seem ready to absorb any lot of pulp offered them within reasonable price limits, while the acknowledged low level of mill stocks of ground wood is a factor which is playing a very important part in the market at present. Many look for mechanical pulp prices to reach much higher levels before the spring. If consumption keeps up in the volume of the past several months and production fails to increase, it is argued that nothing can prevent prices from rising to substantially higher levels than now obtained.

CHEMICAL PULP. — Demand for chemical pulp is beginning to improve following the lapse in business occasioned by the holiday period. Dealers and importers in New York say that thus far no big business has been put through, but that paper manufacturers are inquiring more freely and that indications are it is only a matter of time when consumers will flock into the market to resume purchasing on a broad scale. Prices are being quotably maintained. Now and then reports are received of this or that importer or dealer disposing of pulp at price concessions, but this procedure seems to be more of an exception than the rule, and is explained by the desire of the seller to move some certain lot of stock. There have been reports of kraft pulp strengthening. It is possible, it is stated, to get some small supply of No. 1 foreign kraft at 2.75 cents, and probably a shade less, though importers mostly are quoting several dollars per ton above this price level. Bleached sulphite is holding its own in price, as is soda pulp.

RAGS. — The market for roofing rags is in a near booming condition. Demand is active, and signs are that there is either a scarcity of rags or else that dealers are holding back stocks while preferring not to sell at prevailing prices. Further sharp advancement has been scored in prices. No. 1 domestic roofing rags have sold to felt paper mills this week at 1.30 cents a pound f.o.b. New York, and No. 2 domestic packing has brought 1.20 cents. Most dealers are reported asking in excess of these prices at the moment since, it is asserted, no more rags can be secured from packers to be sold to mills at a profit at these figures.

New cuttings are quotably steady, and old rags of the better qualities rule firm in price. With roofing stock actively wanted, it is felt by dealers that other grades will soon start to move in larger volume, and there is little inclination shown to press supplies onto the market.

PAPER STOCK. — Most kinds of old paper, the low grades in particular, have rapidly risen in price this week. Old folded newspapers have jumped to a level where sales to board mills at 1.40 cents per pound f.o.b. New York have been made, while No. 1 mixed paper is up to about 1.15 cents New York, old No. 1 kraft to

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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Finnish Wood Pulp Union
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2.30 cents, white news cuttings to 2.35 cents, heavy magazines to 2.60 cents, and mixed books at 2.25 cents. Demand has been brisk, and dealers are placing much emphasis on the great difficulty experienced in locating usual amounts of material, it being their contention that not more than 50 per cent of the usual supply of waste paper is now available owing to various factors, including the inclement weather, holding up collections. Shavings show a stiffening price trend. Most sellers want at least 4.25 cents a pound f.o.b. New York for No. 1 hard white shavings, and about 3.60 cents for No. 1 soft white shavings, while extra fine packing is quoted considerably above these figures. That the market is strong and that supplies are none too plentiful is proven by the fact that dealers and packers in frequent cases are turning down orders at prices which do not measure up to their ideas of present values. Moreover, it would appear as if prices will go higher unless available supplies become larger or mill demand recedes.

OLD ROPE AND BAGGING. - Old rope is firm and is readily bringing 6 cents per pound at shipping points for No. 1 domestic manila rope, with sales a little above this price basis reported in some cases. Old bagging, on the other hand, is quiet and tending lower in value. About $1 a hundred pounds New York is generally quoted on No. 1 scrap bagging, with gunny bagging selling at around 1.25 cents a pound.

With the Woodsmen

ABSTRACTS OF FORESTRY LITERATURE

B-9 Annual Report of New Zealand Service for year ending March 31, 1922. L. M. ELLIS, Director of Forestry. A new Forests Act was enacted, effective April 1, 1922, in line with the most progressive legislation and administration elsewhere and repealing former legislation. This act provides for the establishment of a State Forest Service as a separate Department of the Government, and for the selection of the staff as well as for the creation, protection and administration of State Forests. Thus are ensured unity of control, continuity of policy, and elimination of overlapping of services The report of the Director shows that during the year 379,023 acres of forest lands were placed under the jurisdiction of the Forest Service. The grand total area of Crown forests provisionally and permanently gazetted as State Forests, and other lands administered by the Forest Service is 7, 181, 975 acres or 10.8 per cent of total area of the Dominion¼ of this, 1,689,511 acres is permanent State forests. Through exploratory reconnaissance, an additional 2,614,000 acres has been located which is suitable for forestry management. A national inventory of timber resources is under way and has already revealed large areas of forest not suitable for settlement. State forest revenues amounted to £30,836, an increase of 56.5 per cent. Expenditures totalled £107,582, of which 55 per cent was for reforestation, and 36.4 per cent for administration, protection and demarcation. The Forest Service administers grazing and wild game with a view to perpetuation of these resources, and has in hand the development of recreational facilities in the State forests. The most important single problem of the Forest Service is forest fire prevention; for the first time in the history of New Zealand, a real beginning has been made toward its solution, by the employment of fire patrolmen, the construction of improvements, and a campaign of educational propaganda. The patrol organization is yet inadequate, but results show its high value. During the year, 4,949,750 trees were planted on 3,408 acres, a record. The total area of State plantations established since 1896 is 41,868 acres. From the State nurseries were supplied to farmers and private tree planters nearly 900,000 trees and 435 pounds of tree seeds. New Zealand is becoming increasingly dependent on other countries for its timber. The Forest Service is endeavouring to right the banlance by encouraging the use of home-grown timber, closer utilization,avoidance of wateful practices, and forest products investigations. A beginning has also been made in silvical research, calculated to develop the best methods of regulating exploitation, so that the forest may be perpetuated through wise use. The new Zealand Forest Service is facing its heavy problems manfully, under the direction of Mr. Ellis, who is a Canadian Forester. -C.L.

FOREST PROTECTION CONVENTION

On January 23 the Quebec Forest Protective Association will hold its annual conference at the Mount Royal Hotel, Montreal. The officials and members of the association realize the terrible losses incurred annually by the forest fires in Canada and are making a strong effort again this year to bring before the public the fact that unless the people of Canada wake up to their responsibility as citizens and part owners of over 85 per cent. of the forest lands of Canada, their grandchildren and their descendants will be partly deprived of the products of the forest for their comfort and necessities.

The present-day carelessness with fire in the forests is appalling. Over ninety per cent. of all forest fires are due to human negligence. This state of affairs should not exist. The public should be aroused by every available means from its indifference to the wilful destruction of public properties by individuals who act like fools or criminals. So say the forestry men.

The necessity of forest protection will be the subject matter of four speakers at the conference on the 23. Dr. Howe, Dean of the Toronto School of Forestry, and Mr. Robert P. Kernan, manager of the Donnacona Pulp and Paper Company, will give the foresters' and logging operators' viewpoint respectively. The public will be represented by Hon. Honore Mercier, minister of lands and forests, and Prof. Stephen Leacock, of McGill University, will give a short talk.

One of the oldest and most efficient protective systems is that of the Western Forestry and Conservation Association whose representative, Mr. E. T. Allen, will be one of the principal speakers at the conference

With the rapid progress being made in the perfection of the wireless telephone this means of communication in the forest is now practical and valuable especially for protective purposes. Demonstrations will be given by an experienced ranger from the United States Forest Service.

He who has conferred a kindness should be silent; he who has received one should speak of it.—*Seneca.*

PRINTING PUSHES PAPER PRODUCTION

New York, Dec 29. "American consumers of paper are keeping the printing plants busy and the paper mills active producing the raw material for the presses," says the monthly market review of The Paper and Pulp Industry, the monthly bulletin to its members issued by the American Paper and Pulp Association.

"The usual seasonal dullness, with the filling of Christmas orders, is being felt, but the dullness is no more acute, if in fact so severe as usual. Production in all grades is heavy, despite the slight dropping off in orders from the early fall months.

"Reports from the printing industry indicate that consumers of paper are keeping the printing plants using paper in the basis of 98 percent of normal. Meanwhile, the merchants are sending paper to the printers at a rate of 8 percent. above normal, but are, in order to hold down first of the year inventories, holding back the placement of orders to the manufacturers. Even with this condition the mills are showing heavy production, and there is every reason to expect that with the stocks in the hands of the merchants depleted as they will be when the new year begins, there will be a rush of orders.

"The Newsprint mills are operating on a basis of practically normal capacity. Despite the coming in of some new machines, one of the biggest of the newsprint companies is running all of its mills to 100 percent. of capacity.

"Newsprint is breaking all records, due to heavy advertising, and book paper production is also heavy, due to magazine advertising. There is a general tendency toward increased prices for raw materials used by the paper industry."

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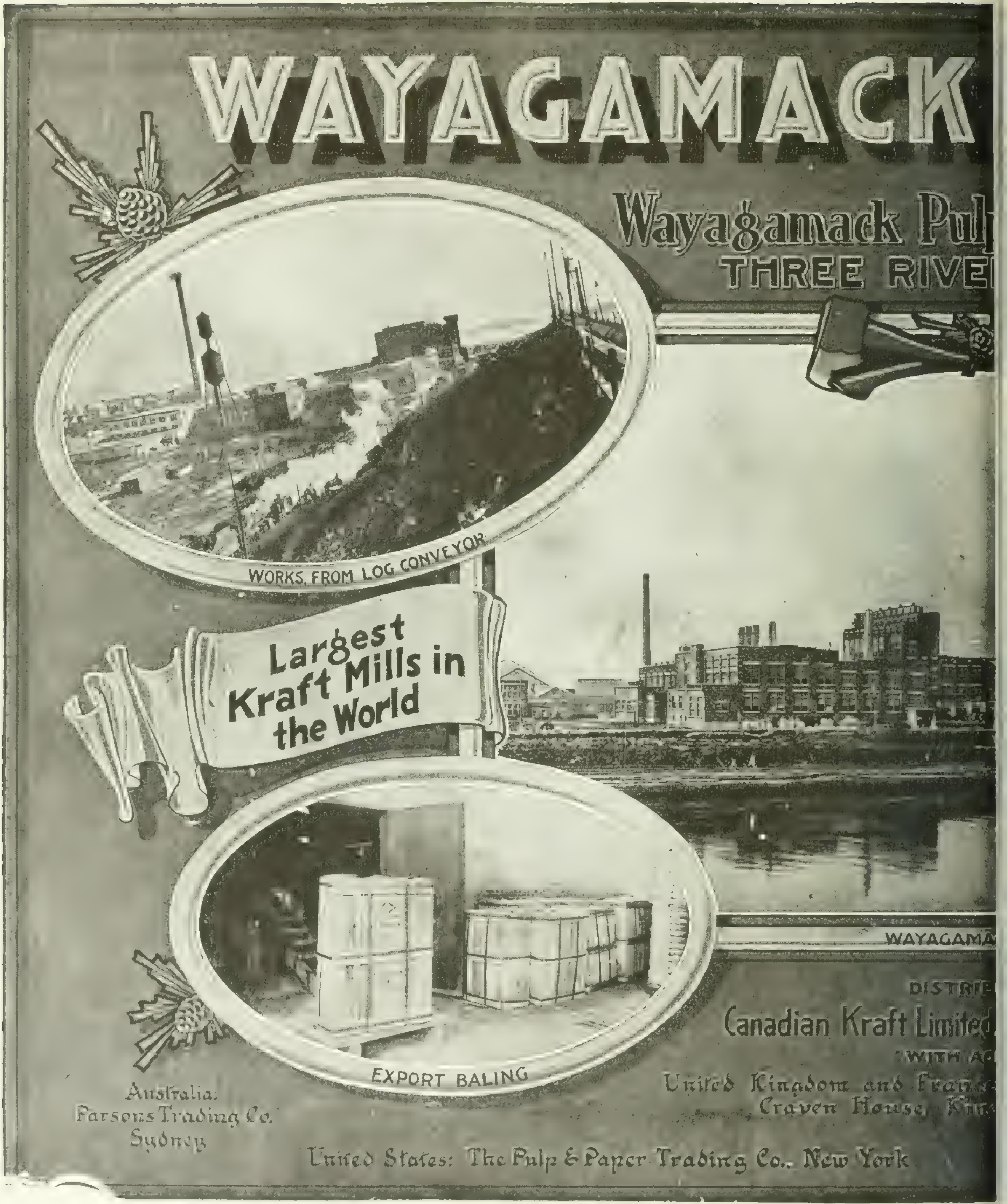

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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-:- EDITORIAL -:-

ARE THE FOREST PRODUCTS LABORATORIES FOR SERVICE OR ENTERTAINMENT?

It is understood that the ghost of moving the Forest Products Laboratories to Ottawa is not yet laid. We have already commented in these columns on the economic fallacy of undertaking such an unnecessary and really backward step as is contemplated by the Department of the Interior. We wish now to ask whether this action is considered as a means of making the Laboratories of greater usefulness and assistance to Canadian industries or a source of entertainment for certain members of the Department.

As far as we can ascertain, there is but one man in Canada who insists on making the change of location and he is the Deputy Minister of the Department of the Interior. An inquiry directed personally to him failed to elicit even a semblance of a logical reason for contemplating the change. Mr. Cory seems to have developed a great fondness for the Laboratories, and a burning desire to have them near. The editor has been visiting the Laboratories in the interest of the Pulp and Paper Industry with considerable frequency for six years, and has never seen Mr. Cory's name on the visitors' book nor heard any of the staff mention his presence.

We have apparently been laboring under a misapprehension as to the function of a Forest Products Laboratory. It has been our impression that these laboratories were established for the assistance that they might be in the development and use of the forest resources of Canada. There is no doubt but that the Forest Products Laboratories of Canada have been of very distinct service to the wood-using industries of the Dominion and the extent of this service has been restricted, not by the location of the laboratories, but by the lack of adequate support in a financial way from the Government. The various industries whose interests are represented in the activities of the Forest Products Laboratories have given cordial and generous assistance in the carrying on of the work that has been done. The history of nearly ten years' experience has shown that there are no serious disadvantages, if perchance there be any disadvantages at all, in the present location of the Laboratories and there are certain distinct advantages in favor of the present place. No one would suggest for a moment, however, that the office building in which the Timber Physics department and administration quarters are housed is at all in keeping with what should be provided for a Government department. On the other hand, the Government and the industries that have received the assistance and benefit from the Laboratories should be most appreciative of the generous hospitality of McGill University in permitting the use of valuable property for the purposes of conducting the laboratory work. A clearly nominal rental of, say, $20,000 a year, would mean that McGill has given the Government much more than the equivalent of an entirely adequate and modern office and laboratory building which might have been erected at Government expense and still leave a good margin from the sum represented by the rent.

The editor has frequently visited the Pulp and Paper Division of the Laboratories and inspected the quarters. It has been easy to visualize the equipment that could be housed and the wonderful work that could be done in those laboratories even as they are, to say nothing of the additional accomodation that could be provided by a very slight expenditure. There is absolutely no reason for even considering the removal of the Pulp and Paper Division of the Laboratories. While we do not suggest by any means, that this division is all there is to the Laboratories, yet we do feel that the work done in conjunction with the Pulp and Paper Industry is probably the most important line of investigation that can be undertaken by the Laboratories and the line of research which is likely to prove most profitable to Canadian industry and commerce. The valve of such work done at the Laboratories depends very largely on the inspiration that the laboratory staff gets from men connected with the pulp and paper industry and the assistance obtained from the pulp and paper mills. Montreal is the natural rendezvous for pulp and paper men and it is the habit of a great many technical men in the industry, to drop in at the Forest Products Laboratories when they are in Montreal. This valuable and necessary contact with the technical men in the mills would be practically lost if the Laboratories were removed to any other city. The Pulp and Paper work requires about one third of the floor space to satisfy the whole organisation, and as we have said, this accomodation can very reasonably be put into first-class shape. The University has just been under very heavy expense in carrying out a very extensive building program which was absolutely necessary in carrying on its own activities and could hardly be expected to undertake further construction for the benefit of the Government which should blush at even the thought of accepting such free accomodation. It is no doubt mostly the intense desire on the part of the University authorities to be of the greatest possible assistance in the development of Canadian industry that has prompted them to place the two buildings occupied by the Forest Products Laboratories at the disposal of the Government for the past nine years.

In the event of the Laboratories being moved to Ottawa, there would not only develop the necessity for the installation of a great deal of expensive machinery which is now available for the use of the staff through the courtesy of the University, but a very lamentable break in contact between the University and the Laboratories would necessarily result. Another exceedingly unfortunate result would be the impossibility for the Laboratories to function in what is perhaps their most important role, at least as far as the pulp and paper industry is concerned, and that is as a semi-commercial intermediate stage between the fundamental, scientific, investigational activities of the University and the practical, mill-size operation of a pulp and paper mill.

The failure of the Government to establish a Central Research Bureau has practically forced the pulp and paper industry to contemplate the organization of a Research Department under a director who would coordinate the work done at the various mill Laboratories. This director, if appointed, will naturally be located in Montreal at the Association offices and will be in a position to work with both the University and the Laboratories. It is inconceivable that a responsible Minister will consider action that will further handicap this most necessary kind of work in the development of a major industry, and the *Pulp and Paper Magazine* will await with great interest the last word with regard to this moving proposition, namely, that the idea has been dropped.

Let the Department heed the expressed opinionof prominent men in Canada's wood using industries who *know* the Laboratories should remain in Montreal.

RESEARCH ASSOCIATIONS

By W. M. Goodwin, Editor Canadian Mining.

Constantly there is noticed these days in the technical press of Britain and the United States the accomplishment of the numerous Research Associations in both countries. There is, as well, an effective international *liaison*, which is remarked and acknowledged frequently on both sides of the Atlantic. The progress of these associations during the last few years both in numbers and in size has been decidedly marked, and rests not only upon the faith of those responsible for the organizations and the stimulus due to a sense of public service, but also (and mainly) upon tangible results, measurable in dollars and cents, or in pounds, shillings and pence. Many of the research associations, young as they are, and painful and slow the progress of most research, have already more than justified their existence.

In Canada we have as yet made hardly a beginning in the establishment of Research Associations. We have been thus negligent in the face of the fact, now generally recognized, that co-operation in research is one of the surest means toward the end of industrial progress. This is no longer a matter of opinion; it is a matter of fact. It was proved long ago in Germany, but only lately has the idea been applied generally throughout the Anglo-Saxon world — excluding Canada. It is not that we Canadians do not need the aid of industrial research; we are in need of it as much or more than any other country. It is not that our industries are insufficiently developed to support the expense of combined research; we have a number of well-founded industries of outstanding importance. It is not that we have lacked information as to the value of co-operation research and the means to its adoption; the subject has been discussed almost *ad nauseam*. Our inability to act when action is so clearly demanded is inexplicable, unless the reason is that we Canadians are still too near the pioneer stage of development to allow of efforts that are more characteristic of a more advanced stage of civilization.

THE PATH THE CALF MADE

One day through the primeval wood
A calf walked home, as good calves should:
But made a trail all bent askew,
A crooked trail, as all calves do.

And from that day, o'er hill and glade,
Through those old woods a path was made:
And many men wound in and out,
And dodged and turned and bent about:
And uttered words of righteous wrath,
Because 'twas such a crooked path.

The years pass on in swiftness fleet
The road became a village street:
And this before they were aware
A city's crowded thoroughfare.

A hundred thousand men were led
By one calf near three centuries dead.
They followed still his crooked way,
And lost one hundred years a day:
For such a reverence is lent
To well established precedent.

—Sam Walter Foss.
(Reprinted from "The Crest".)

Determination of the Bleach Requirement of Pulp*

By BJARNE JOHNSEN and JOHN L. PARSONS.
Hammermill Paper Company,
Erie, Pennsylvania.

The object of the bleaching of pulp consists in bringing about a definite whiteness through the oxidation of the colored substances without attacking the fibers. An excess of bleach not only denotes a loss in bleaching material but also, in many cases, results in an attack of the fibres. On the other hand, the desired whiteness is not secured if the amount of bleach solution employed is insufficient.

In every mill larger or smaller variations in the bleach requirement occur and only when the bleaching quality of the pulp is exactly known at all times, will it be possible to measure the amount of bleach liquor so that a pulp of definite whiteness can be produced without loss.

The best known methods for determining the bleach requirement (Arnot, Wrede, Klemm, Sutermeister) have been compiled by Schwalbe and Sieber[1]). Of these, perhaps the method of Klemm has proved to be the most useful as a mill control test but has not been generally adopted, since it requires five hours for completion. In most modern mills it is necessary to know the bleach requirement in a much shorter time.

Bergman[2]) has recently described a similar method. He bleaches several ten gram samples (oven-dry basis) of a pulp, employing a consistency of 3½ percent., for five hours at 40° C. with different amounts of bleach solution, of an alkalinity as constant as possible. In every case, at the end of the experiment, a distinct excess of chlorine should be present. The values are then plotted in restangular co-ordinates with the amounts of consumed chlorine as the abscissas, and the chlorine consumption as the ordinates. Through two of the points is drawn a straight line, the extension of which cuts a line which bisects the angle between the coordinate axes. The position of this point of intersection represents the theoretical amount of chlorine required for bleaching. It should be noted that one of the two points must lie near the forty-five degree angle line in the graph. For exact analyses it is recommended that this point be connected to two others and the average of both points of intersection with the bisecting line be computed.

Since the bleach requirement of the pulp to be tested is in most cases not even approximately known, this method necessitates a number of analyses with different quantities of bleach solution in order to secure a good selection of favorably located points. For this reason, the method is likely to be too bothersome for mill control but very useful for scientific investigations.

Recently Sieber[3]) has proposed a method for the classification of pulps which depends upon the chlorine consumption. This method, which is carefully worked out and appears as a valuable contribution for the characterisation of pulps, was also employed by Sieber for the determination of the bleach requirement. We have applied this method to several pulps and compared the results with those which were obtained with other methods. Most of the pulps, which were tested, were of American origin and produced according to the Ritter-Keller process. Sample "H" was a Scandinavian Ritter-Keller pulp and sample "I" a Scandinavian Mitscherlich pulp.

In the course of this investigation, "Tingle's bromine number" or "chlorine factor"[4]) determination was used. As is known, this method depends upon the action of bromine on pulp which, for the purpose of bringing about a uniform action, is previously dissolved in a mixture of concentrated sulfuric and hydrochloric acids. It is to be expected that this method will only give reliable results in the hands of an experienced analyst and, for that reason, is not likely to be found in general use as a control of technical operations. Another objection might consist in the fact that the prescribed weight of the sample, 0.75 gram, does not always represent a good average one.

Furthermore, a method was employed in this investigation that was worked out by one of us several years ago in the laboratories of the Hammermill Paper Company. This determination depends upon the action of potassium pemanganate on unbleached pulps. Since the reaction is similar to the effect of hypochlorites on pulps, at first an oxidation of the colored constituents, it was assumed that a simple relation existed between the consumption of potassium permanganate and the amount of chlorine required for bleaching. This consumption depends upon the concentration of the solution, the duration of action and the temperature. As a result of several experiments, 250 cc. of 0.1-normal solution to 10 grams of pulp (oven-dry basis) was selected as the working ratio between the permanganate and the pulp. It was determined, furthermore, that during the first 30 minutes, the reaction was very rapid and the consumption of permanganate inside of an hour showed a typical differentiation of pulps. After an hour the reaction was slower. To study the influence of the temperature on the rate of the reaction, experiments were made with pulps of different bleach requirements. The above mentioned strength of solution was employed, the time of action in each case was one hour and the temperature was varied in the different experiments within the limits 20° and 30°C. It became evident that the rate of reaction increased with the temperature: the permanganate number (see below) increased for each degree Centigrade within the stated limits about 0.013 per unit permanganate number. For instance, if a P. No. of 6.0 at 20° C. was obtained, at 25° C. the P. No. of the same pulp would be $6.0 + 5(6.0)\ (0.013) = 6.39$. In the following investigation a constant temperature of 25° C. was employed The method of procedure is as follows:

10 grams of pulp (on the oven-dry basis) are disintegrated in a small quantity of distilled water contained in a 500 cc. wide-mouthed flask provided with a glass stopper. More distilled water is added, until in all 225 cc. of water are present in the flask (inclusive of the water present in the pulp). The contents are warmed to 25° C. in a water-bath and exactly 25 cc. 1-normal permanganate solution added. The contents are stirred with a large glass rod and allowed to stand with frequent stirring for one hour at 25° C. Then the

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*Zellstoff und Papier 11, No. 11, 1922, page 258.

flask is closed, vigorously shaken, and about 100 cc. of the solution sucked out. From this, 10 cc. are pipetted off and emptied into an Erlenmeyer flask, which contains 10 cc. 0.1-normal oxalic acid in about 100 cc. of warm water acidified with sulfuric acid. This solution is then titrated with 0.1-normal permanganate solution. The number of cc. which are required for the titration is called the permanganate number (P. No.).

For hard pulps where the P. No. is greater than 10, it is necessary to use only 5 grams of pulp instead of 10, and to multiply the result by two.

A series of pulps were tested by this method and by those of Sieber and Tingle and the values, so obtained, compared with the chlorine consumption of pulps obtained in separate experiments. The chlorine consumption was determined by bleaching the pulps, with an excess of chloride of lime solution, to definite whiteness which was tested in the following manner: from the bleached and washed pulps, samples were cut and, after drying, were tested for whiteness in a color matching apparatus as described in a report of the Technical Association of the American Pulp & Paper Industry.[5])

It was assumed that sharper readings could be secured if the pulps were not bleached to a snow whiteness, but to the color of the usual bleached and dried commercial pulps. According to our experience, this color corresponds to the 85 per cent. white wheel of our color matching apparatus. The amount of chlorine necessary to obtain this color was determined in the following way:

10 grams of pulp (on the oven-dry basis), after disintegrating in distilled water, were brought into a 500 cc. wide-mouthed flask provided with a glass stopper. From a clear calcium hypochlorite solution, of known concentration (about 1.75% active chlorine) and alkalinity (7 to 8, according to Sieber's method), a sufficient quantity was measured to allow at the end of the bleaching test an excess of approximately one percent. chlorine (based on the pulp). Distilled water was added so that in all 300 cc. were present. The contents were carefully mixed and the stoppered flask allowed to remain in a waterbath at 35° C. for five hours, with frequent shaking. Then the solution was filtered and the excess of chlorine determined by titration. After washing the pulp, its color was determined as described previously. In this article, this determination will be termed the "Standard Method."

The results of the tests are summarized in the following table (No. 1).

From the data, so obtained, and the chlorine consumption, a factor can be calculated for each method and each pulp. This factor multiplied by the value obtained in each test should determine the amount of chlorine required for bleaching. These factors are calculated in every case and given in Table 1 (f_1, f_2, f_3).

TABLE NO. 1.

Method	Standard		Sieber		Tingle		Johnsen	
Pulp No.	% Added	Cl. Consumed	Cl.C. No.	f_1	Chlorine Factor	f	P. No.	f_3
F	4.0	2.79	20.9	0.134	1.06	2.63	5.1	0.547
G	4.80	3.03	20.7	0.146	1.11	2.73	5.8	0.522
D	4.70	3.75	25.2	0.149	1.40	2.68	6.1	0.615
A	5.60	4.01	28.5	0.141	1.44	2.78	7.0	0.573
B	5.60	4.58	31.9	0.144	1.70	2.69	7.4	0.619
C	6.50	5.50	38.9	0.141	1.85	2.97	8.4	0.655
E	8.30	6.69	39.3	0.170	1.87	3.58	10.8	0.620
H	9.50	8.30	46.3	0.179	2.35	3.53	12.2	0.680
I	13.50	13.2	66.2	0.199	3.68	3.59	16.2	0.815

It is at once evident that the factor is not a constant value with each method—that it decreases the bleach requirement of the pulp decreases. The factors found for ecah method were plotted in rectangular co-ordinates (see curve), in which the value for the chlorine consumption number, chlorine factor and permanganate number are recorded on the abscissa, while the calculated factors are represented on the ordinate. It is observed, with the methods of Sieber and Johnsen, that the values for the factors fall very nearly on straight lines, the directions of which are expressed by the following formulas:

$f_1 = 0.104 + \text{Cl C. No.}\ (0.00144).$

$f_3 = 0.415 + \text{P. No.}\ (0.025)$

The amount of chlorine required for bleaching can be computed for any pulp by applying these formulas directly:

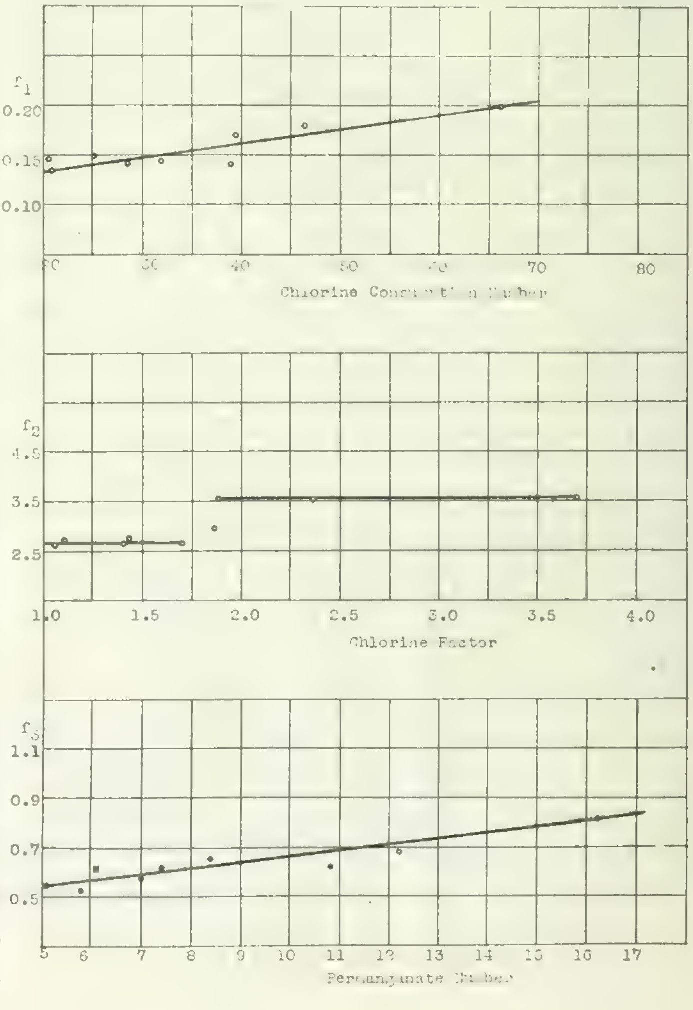
$\%\ \text{Cl} = \text{Cl C. No.}\ [0.104 \pm \text{Cl C. No.}\ (0.00144)]$

$\%\ \text{Cl} \pm \text{P. No.}\ [0.415 + \text{P. No.}\ (0.025)]$

The values in Table 2 were obtained by using these formulas.

TABLE NO. 2

Method	Standard	Sieber		Johnsen	
Pulp No.	Chlorine Consumption	Calculated Amount of Chlorine	Variation from Standard	Calc'd Amount of Chlorine	Variation from Standard
	%	%	%	%	%
F	2.79	2.80	+0	2.77	+0.
G	3.03	2.77	8.5	3.25	+7.2
D	3.75	3.54	5.5	3.46	-7.7
A	4.01	4.13	+3.0	4.13	+3.0
B	4.58	4.78	+4.4	4.44	—3.0
C	5.50	6.22	+13.0	5.25	—4.5
E	6.69	6.31	—5.7	7.40	+10.3
H	8.3	7.9	—4.8	8.78	+5.8
I	13.2	13.2	±0	13.2	±0



In several instances the variations in both methods between the calculated amounts of chlorine and the amounts determined by the bleach tests are appreciable. But when it is considered that the investigation includes pulps of very different bleach requirement and different origin, it appears that these two methods will prove to be very valuable for mill control.

Of course it is not possible to directly employ the above given formulas in every mill, for bleaching conditions are very different in different mills. The magnitude of the factor in a given mill depends upon many details in the bleaching process (bleaching apparatus, consistency of the pulp, temperature, nature of the bleach solution, etc.) and upon the whiteness decided for the bleached pulp. It is however, an easy matter to determine this factor for each mill by carrying out a small number of tests.

The results which were secured by Tingle's method show that the factor to be used does not increase proportionally with the hardness of the pulp, but rather that it is one constant for a series of easy bleaching pulps, and another constant for difficulty bleaching pulps.

This method, however, has not been sufficiently tried out to draw a final conclusion as to its merits. We expect, however, that if the determination of the interesting chlorine factor is carefully developed, it will prove to be a very valuable method in the scientific investigation of pulps.

As previously stated, the permanganate method was developed in the laboratories of the Hammermill Paper Company, and has been employed for four years in that mill as a control test in the mill operations.

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3) Zellstoffchem. Abhdlg. 1, 1920, page 53.
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4) Journ. Ind. Eng. Chem. 14, 1922, page 40.
Zellstoff und Papier 11, 1922, page 103.

5) Paper, Nov. 8, 1916.

Sutermeister, Chemistry of Pulp and Paper Making, 1920, page 375.

Note.—This paper is expected to cause some discussion at the annual meeting of the Technical Section, January 24 and 25.—Ed.

CHINA NEEDS NEWS PRINT OF SPECIAL SIZE

Dr. J. W. Ross, Canadian Trade Commissioner, Shanghai, China, is spending some time in Canada conferring with manufacturers of various lines regarding doing an export business with China. He states that China uses considerable news print but that it is of a special size and much lighter in weight than is turned out by the Canadian mills. The exports, therefore, from the Dominion have been limited. China buys considerable British Columbia fir and the importations of timber last year amounted to 42,000,000 feet.

Ocean Falls, B.C., January 8. — E. V. Johnston was killed and David Patton was injured, when a piece of heavy machinery from the steamer Venture crashed to the dock here on Sunday.

HOW TO MAKE YOUR OWN LOG. TABLE

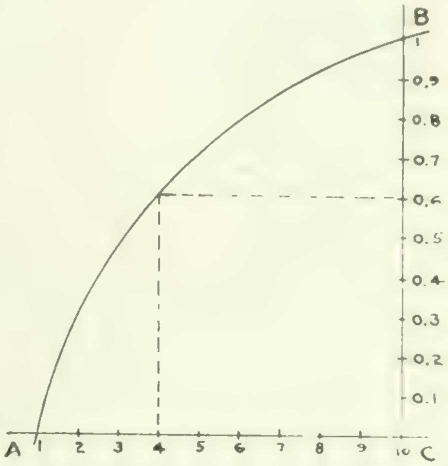
Have you ever been "out in the woods" away from a table of logarithms and "up against it" simply because you didn't have any logarithms to work with?

If so, this rough method of finding approximate logarithms will doubtless interest you. It is simple and very easily remembered.

Lay off axes A C and B C at right angles to each other. From the intersection lay off nine equal spaces to the left as shown and mark them 1. 2. 3. 10 from left to right.

Then lay off ten equal spaces upward from the intersection as shown and mark them 0. 1, 0.2, 0.3, etc.

Then with the extreme A and B as centers, and distance AB as the radius, locate D. From that center describe the arc AB.



We are now ready to read off our approximate logrithms. For example, what is the lograithm of 4?

The dotted line shows how it is found. It is just a hair more than 0.6.

Anybody familiar with logarithms will now understand the rest.

It is more convenient, of course, to make the drawing on squared paper, but if such paper is not handy one can easily do without and use plain paper.

Of course, this is not claimed to be "better" than a logarithm table, nor is it as good, but as an approximate method results will be found to be "pretty close" to the tabular results. Best of all is its simplicity and ease with which this method can be remembered. Do it once and you will never forget it.

N. G. Near

PULP AND PAPER SECURITIES PROMINENT

Greenshields and Company of Montreal, have recently issued a catalog of High Grade Canadian Investments. The pages of this catalog describe the properties represented by the securities and show the capitalization, production, earnings and history of the various companies whose securities are handled by Greenshields and Company. It is interesting to note that pulp and paper companies hold a prominent place among the securities described. A copy of this catalog would be a very handy thing for a person who is interested in the principal information regarding investment possibilities.

The name of the concern formerly known as the Montreal Paper Co., Limited is now Bishop and Sons Limited. There has been absolutely no change in the management, and the personnel of the company remains as before. Bishop and Sons, Ltd., manufacture a variety of felts at Port Neuf Station, P. Q.

Kraft As a Printing Paper

By W. H. SHERRIFF, of Hodge-Sherriff
Paper Co., Toronto.

Ten years ago most printers would have ridiculed the suggestion that kraft paper could be used for art printing. In fact, few printers knew what the word kraft meant and those who did classed it as a wrapping paper pure and simple and one not to be placed on the same high pedestal as the art papers then in use for various attractive printing jobs.

But times and manners change and since 1912 kraft paper has become known the world over as a paper that can be adapted to many and varied uses. The strides that have been made by this paper in connection with printing are nothing short of marvelous, in fact it is no exaggeration to say that in the short space of eight or nine years kraft has developed into a veritable art paper.

While the majority of printers are at present ignorant of its high qualities, there are not a few of the more important and progressive members of the craft who are ever on the alert for something new and novel, who have produced, with unqualified success, circulars, prospectuses, company reports, that call for something in the way of originality, booklets, brochures and many other artistic productions in colors. In fact, judging from some of the work that has been turned out, it would appear that there is no end to the possibilities of kraft for commercial printing.

It is specially adaptable for color work and, owing to its rich brown tone, brown inks especially can be used with telling effect. It stimulates the imagination and creative faculties of the designer and compositor and assists them to produce work that is bound to command attention and admiration. It lends itself to designs of brilliant coloring with as much readiness as to combinations of quiet colors and as a paper for advertising purposes it has few equals.

Two of the principal features of this paper are its rich, attractive appearance and its wonderful strength which is an important point in connection with booklets, cover papers and other work where constant handling is the rule.

Special attention is paid to kraft required for special purposes such as envelopes, cover papers, calendars, booklets and other work which requires exceptional care where the question of high class printing is involved. Large quantities of this paper have been exported to Overseas Dominions for letter press printing and in one case an important shipment was used by the Government of one of the Overseas Dominions, with considerable success, for census forms.

Kraft paper for printing receives more care during the process of manufacture than is the case with the ordinary wrapping paper sheet and it is sorted and finished in the same manner and with as much care as in the case of higher class printing papers.

There is no doubt that the adaptability of this paper to various uses is becoming more apparent day by day and the progressive printer, whose mind is open to the reception of new ideas, who is awake to new opportunities and who is not a slave to tradition, will in due course reap the reward of his fore-sight.

To Develop The Gres Falls

The St. Maurice Power Co., a subsidiary of The Shawinigan Water & Power Co. has acquired title in fee simple to the power lights at Gres Falls from the St. Maurice Lumber Co. and plan immediately to construct a dam giving a 60 ft. head and developing 120,000 H.P. It is expected to have the work done in 18 months or sooner.

THE THREE STAGES OF SELLING

Sixty paper mill executives and salesmen attended the mid-winter meeting of the New England members of the Salesmen's Association of the Paper Industry at the Colony Club in Springfield, Mass., on January 5, and after an afternoon get-together, and dinner, Fred W. Main of the Worthy Company Association was introduced as toastmaster by John E. A. Hussey, Vice-President for the New England district.

President Raybold of the American Paper and Pulp Association was the first speaker, reviewing three states in the development of salesmanship in the paper industry. The first stage, he said, was the sample case stage, where salesmen went out with a case of samples, selling by sample without idea of selling a new organization or service. The second stage was that of the manuscript case, where fewer samples were taken and where attempts were made to sell all of a certain grade of paper in stock at the mill. At this time it was the practice for the purchaser or the jobber to go to the mill and buy everything he needed that was in stock in the mill. The third stage, which has recently begun in the industry, was indicated as a period of selling of an organization and of service, a salesman going out without samples but selling a particular mill organization, and emphasizing at all times service. Mr. Raybold also emphasized the development of right understanding between the different mills in the industry, and this understanding he said had come through the gradual willingness of mill representatives to sit down together as at this dinner to discuss common problems and to get acquainted. He spoke strongly in favor of the Salesmen's Association and the opportunity which it was offering for the salesmen of the industry to keep together for individual betterment and for the betterment of the entire group.

S. L. Willson, Vice President of the American Writing Paper Company was given a very hearty greeting and a welcome to the paper industry in New England. Mr. Willson spoke briefly of the salesman as he has seen him during the past years while connected with one of the largest of the paper merchants' organizations in the Middle West.

C. R. Crocker, of Crocker-McElwian, was then called upon and for the executives, welcomed Mr. S. L. Willson to New England and to the fellowship of the manufacturers of paper. Mr. Crocker emphasized the results of association activities in the industry which show themselves everywhere at the present time through co-operation and co-ordination of activities.

George A. Galliver, American Writing Paper Company, was called upon and spoke briefly on the value of men getting together as at the dinner, for discussion of common problems. He emphasized the fact that "with charity to all and malice toward none," both manufacturers, salesmen, and merchants would be able to build up a greater paper industry. He emphasized the need of everyone connected with the paper industry boosting the industry at every turn. He then spoke briefly of the way the American Writing Paper Company has been working to educate the printer as to the right use of paper.

Uses of the Microscope in Paper Mills*

Equipment of the Laboratory Worker for the Microscopical Examination of Samples

By JAMES STRACHAN
Donside Paper Mills, Aberdeen, Scotland

The microscope appears to have been introduced to the paper industry early in the nineteenth century by paper-makers who were amateur microscopists. The writer has an old simple microscope which was used successively by three generations of an old Scottish papermaking family.

During the first half of the century, from the introduction of the paper machine about the year 1807 to the early fifties, paper was made in this country almost exclusively from rags and the primary use of the microscope, that of distinguishing the vegetable sources of various fibers was thus limited. In the second half of the century however, which witnessed the introduction of straw, esparto grass, wood and other new raw materials, papermaking rapidly developed into one of the most important industries in Great Britain. During this period we established a world-wide reputation for the manufacture of fine paper, and this we still maintain.

With the introduction of new fibers, the use of the microscope in papermaking became more apparent, and when towards the end of the century papermakers began to employ trained scientific men, the latter found this optical instrument already in extensive use in the industry. What the English papermaker owes to the amateur microscopist and exactly how much we are indebted to the latter can hardly be appreciated at the present day. The writer has had occasion to inquire into the history of many of the pioneers of modern papermaking in this country, and he was surprised, but not astonished, to find that the majority were amateur microscopists.

Origin of Fiber Microscopy

The foundations of fiber histology were laid down by Quekett in his "Lectures on Histology" (1851), and were first applied specifically to the examination of paper by Suffolk in his "Microsopical Manipulation" (1869)—a series of lectures delivered before the Quekett Club. The scientific study of the microscopical examination of fibers from the technical side was continued in valuable publications by Wiesner (Wien 1867) and Vetillart (Paris 1876). The technology of paper microscopy was specially developed in Germany by Herzberg (1888), Behrens (1896), and Hanausek (1901), and in Austria by v. Hohnel (1888).

In this country much of the recent literature on the microscopy of paper fibers has been borrowed from German textbooks, but the scientific application of the microscope in practical laboratory work has been stimulated by a few well-known microscopists, among whom we may mention Christie (photomicrographs) and Flatters (preparations) and by the work done in the laboratories of technical chemists connected with the papermaking industry; among the latter we find Cross and Bevan, Evans and Wirtz, Gemmell, Beadle, and Sindall, all of whom have done much for paper microscopy by research work, publications and translations, and personal tuition.

Uses of the Microscope in Paper Mills

The microscope is generally used in the paper mill laboratory, in the first place, for the identification of various fibers in common use, such as linen, cotton, hemp, esparto grass, straw, manila, jute, wood, etc. The pulped fiber is mounted temporarily in one of the numerous iodine stains, prepared specially for the purpose, and examined under a medium power; a good 16 mm. objective is the most useful lens for this work. The fibers are identified by their characteristic forms and markings, and the percentage composition of mixtures estimated to within 5 percent. For accuracy in this work long experience and constant practice are necessary. It is a common experience to find random workers varying as much as 10 to 15 percent. in their estimates of percentage composition. The differentiation and identification of fibers is used:—

- (a) in the analysis of samples sent to the mill, for matching with orders, and
- (b) controlling and checking the work of the practical papermaker in his blending of various fibrous stocks.

The routine work in the average paper mill laboratory also generally includes:—

- (c) the identification of starches (used in sizing);
- (d) the examination of mineral powders (used as fillers) such as kaolin, gypsum, talc, etc.;
- (e) the identification of foreign matter, and tracing the origin of "dirt" particles in pulp and paper;
- (f) in some mills the beating process and the reduction of fiber-length is partly controlled by microscopical observation. In mechanical woodpulp mills the grinding is largely controlled by microscopical observation or projection by some form of the lantern microscope.

From my own experience of paper mill laboratories I find few microscopists who attempt to extend their work much beyond the ground outlined above. Few also attempt to use the simplest form of microtome in spite of the fact that cross sections may be quickly cut for temporary mounts of fibers, and much may be learned from them.

Training in Microscopical Technic

The remarks I make under this head apply particularly to the paper mill, but may also be studied with profit by workers in other industrial laboratories. A good training in practical microscopical technique is necessary and a fairly wide knowledge of all branches of microscopical science desirable, together with a small but carefully selected bookshelf of reference works. The laboratory worker who desires to get the best out of his microscope should be able to mount and stain a bacterial film, stain and cut a vegetable section, grind a mineral section, prepare and etch a metal, and be conversant with the practical elements of micro-chemical manipulation. He should also have a good working knowledge of four methods of illumination, viz., direct light, reflected light, dark ground and polarized light, and he should also be able to record his work with the camera.

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*Read and illustrated by lantern slides at a meeting of the Royal Microscopical Society, London.

The laboratory worker frequently pleads lack of time to study and cover such ground. I have found by experience, and have always taught, that such knowledge saves time. It is not necessary to aim at carefully prepared mounts for permanent collection. Speed, simplicity, a little care and practice are necessary. Every substance or material that comes to the laboratory for physical or chemical examination should first be submitted to suitable microscopical preparation and examination. The information so gained frequently solves problems qualitatively, leaving only the quantitative work to be done, and never fails to yield guidance for method in the latter work.

"What do you expect to see there?" I am frequently asked by someone when I take a substance to the microscope; something that is not usually examined microscopically. "I do not know," I reply, "but I expect to find something."

Physico-Chemical Problems in Papermaking

In the manufacture of paper numerous problems and difficulties arise. Some of the problems are chemical, some physical, and other physico-chemical. The processes of isolation of cellulose from raw materials by digestion and bleaching are largely chemical. The beating process, whereby the cellulose is broken up mechanically and rendered colloidal to varying degrees, is largely physical. The processes of sizing and coloring paper stock present numerous physico-chemical problems.

Variations in the methods of conducting such processes produce a variety of results which are taken advantage of by the practical papermaker in the production of desired physical properties in the many kinds of paper made for particular purposes. The practical papermaker works largely by rule-of-thumb methods based on past experience. If he gets a certain result by a process of trial ending successfully, to obtain the same result in future he will repeat the same process exactly, although in doing so he may perpetuate an indirect method involving useless error and correction.

The constant use of the microscope reveals the fact that all variations in the chemical and physical treatment of cellulose are accompanied by changes in the structures and micro-chemical properties of the fibrous material. Some of these changes are slight but perfectly definite when closely studied under the microscope. The importance of such detail is obvious. An exact knowledge takes the place of vague descriptions, and the peculiarities of masses thus described are more exactly described and to some extent explained in terms of the individual constituents and elements. In this work both polarized light and dark-ground illumination are almost indispensable.

Value of Knowledge of Detail

Such a knowledge of detail gained by use of the microscope is invaluable when applied in the control of practical processes. The application of the microscope in this direction in the paper mill is still in its infancy, but promises to be a most interesting and valuable field of work.

It is generally recognized that a continued study of details is apt to dwarf the imagination, but when such study is developed over a wide enough field and always with practical issues in view the reverse is the case, and a correlated and collated mass of detail stimulates the imagination.

About twenty years ago I commenced the study of the peculiar dendritic growths arising in paper from particles of copper and bronze embedded in the fibers. These growths supplied the amateur microscopist with pretty objects, but were regarded as a bit of a nuisance by the practical papermaker. My object in studying them was not so much their prevention, which is a simple enough matter, as the nature of the chemical reactions taking place during their growth. The summary of the results attained, as read before the Royal Microscopical Society, and published in the **Transactions**, shows how the long continued study of details of an apparently trifling matter indicates important conclusions concerning the deterioration of cellulose in modern paper.

A Puzzling Problem

A problem which has puzzled papermakers and their chemists for nearly a century lies in the sizing of paper with resin. The resin is added to the pulp in the form of a soap (sodium resinate and dissolved resin) and precipitated by the addition of aluminum sulphate in the form of aluminum resinate mixed with free resin. The problem may be stated in the question, "Why does free resin alone, precipitated from the soap with sulphuric acid, yield a sizing effect which is not permanent?" Some years ago a German society offered a premium for a solution of this problem which has been propounded perennially without any reasonable solution forthcoming. Yet the solution is very simple, and I have observed it under the microscope to my own satisfaction. Resin **per se** precipitated and rubbed over the surface of the fibers when dried behaves as a fluid and flows slowly into the capilary pores of the cellulose. A film of alumina precipitated and rubbed over the surface of the fibers forms a membrane impermeable to resin. Whether this film is of alumina or aluminum resinate, or a mixture of them is immaterial, the fact is demonstrated. It is possible to have an unsized absorbent paper containing six percent. of resin, and a similar paper made from the same fiber very hard-sized and ink-resisting with only three percent. of resin provided the alumina is there in sufficient quantity. Very careful observation is necessary in work of this kind. The microscopist must train his eye for fine detail. The moral of the story of the two microscopists—one who cannot see the flagellae on a certain bacillus with a 1-12th oil immersion, and the other who can see it plainly with an 8 mm. objective—is always with us.

Investigation of Spherical Objects

Many years ago when investigating the ash of the leaves from various trees and their silica content, I found in many cases a few puzzling objects in shape of very minute spherical particles of mineral matter. Later I found the same objects in the ash of various kinds of paper. As some of the papers were not of wood cellulose there was obviously no apparent connection with the trees. I was interested to know where they came from. They were perfect spheres, highly siliceous, isotropic and varied in color from white to brown. Some time later I met my spherical friends again while investigating the dust falling from the air in a paper mill. One of them on this occasion was found to contain a minute included gas or air-bubble. Here was a clue to their origin. They were silicates formed by fusion. A brother microscopist said they were meteoric dust and showed me a mount collected from a roof. I however, suspected a humbler origin, namely the mill chimney, and soon found that many tons of the mysterious spheres collected annually in the furnace flues, and that the smaller ones went up the chimney literally in millions. They were particles of the siliceous ash of coal, fused in the furnace gases and whirled in the spheroidal state by the draught into the cooler atmosphere. While the inference from this incident, concerning air carried impurities in a mill making fine paper is perfectly plain, the occurrence of this spherical glass dust in the atmosphere of manufacturing centers suggests the usefulness of inquiries in other directions. For example, what is the physiological effect of such dust on living organisms? What would take place on the leaves of trees sprinkled with such dust and exposed to sunlight, each little sphere acting as a "burning-glass"? What is their effect when breathed into the human lung?

All paper mills are troubled at some time with slimy growths in their water pipes. These give rise to dirty specks in the paper. They may be divided into two kinds, broken slime from fresh-water pipes and gray or black slime from white-water pipes (conveying water containing cellolose in suspension). The paper maker calls them "slime," and they are most difficult to get rid of. He doesn't know much about them except that they give trouble in making clean paper, and that they come and go mysteriously. I have found that both kinds of slime are growths of higher bacteria. The brown slime from fresh water consists of iron bacteria, and the gray slime from white water of bacteria that grow during the fermentation and decomposition of cellulose. Both are anaerobic and grow rapidly in a warm situation, especially in a slightly acid medium.

While much time is wasted in attempting to clean pipes in the paper mill by mechanical means, much better results may be attained by studying the conditions that produce the growths.

Grit and Sand In Paper

All paper contains a small percentage of grit or sand. This is a subject that has not received the attention due to it, and it is one that can only be dealt with properly by the microscopist. The sources of this grit are numerous, and can only be traced up with the aid of a mineralogical microscope. A large proportion of the grit in printing papers may be traced to the China clay used in loading, and, when excessive causes undue wear and tear of process blocks. I have found a small percentage of grit in a foreign paper specially made for wiping the front lens of oil immersion objectives. I do not advise the use of paper of any kind for cleaning photographic or other lenses.

And so on; in every department of a manufacturing process such as papermaking interesting application of the microscope may be found, and, the more detailed the study, the wider the field.

There are several points, however, which require special notice.

An important field for research lies in microscopical observation of the effects produced by the beating process. The imparting of colloidal properties to cellulose pulp by mechanical treatment is accompanied by a structural disintegration of the fiber. The trend of modern technical opinion on the so-called "hydration" of cellulose is towards a chemical explanation, but from long continued microscopical observations, with immersion dark ground illuminations, combined with other experimental work, I am of the opinion that a purely physical explanation is sufficient, and that the minor chemical changes are incidental.

Another field almost untouched is the systematic association of variety in fiber structure with the physical characteristics of paper made from particular fibers.

Transparency and capacity to light, natural "bulk," and density, elasticity and brittleness, etc., etc., are properties associated in many cases with particular fibers, but the particular structures giving rise to such properties have not been fully and systematically investigated.

In this connection the use of the microtome and the polariscope have proved fruitful in my own experience.

Papermaking technologists all the world over, are, and have been for over a century, searching for new sources of raw fibrous materials. In this subject many more failures than successes have been recorded. Undue prominence has too frequently been given the "yield" of cellulose as determined by chemical means without careful description and valuation of the cellulose from microscopical examination. Any plant yielding more than 35 per cent cellulose is regarded as promising, provided that questions of quantity, transport and treatment are commercially solvent. Three of the most promising new fibers which are being experimented with at the present day are cotton-hull fiber (unripe cotton), bamboo and papyrus. Cotton hull stock is a most promising material, yielding with proper treatment a strong fiber of good permanent qualities. Very fine printing papers have been made from both bamboo and papyrus, but both the latter contain a much larger proportion of non-fibrous epidermal and parenchymous elements than any other material in common use. The laboratory yield from bamboo and papyrus, particularly the latter, is much higher than the practical papermaking yield. In practical work much of short brittle epidermal cellulose and the tender parenchyme tissues are broken up and lost. An extreme case of this kind is that of certain mosses available in large quantities, and giving high yields of cellulose (40 to 45 percent) of little value for papermaking because of the shortness and minuteness of the disintegrated plant structures. Anything less than 1.5 mm. in length has a low value for papermaking purposes.

On the other hand, with careful treatment of such fibers and special arrangements for retaining the delicate parenchyme cells in particular may result in the production of papers having special physical properties not easily obtained by the use of other fibrous materials lacking such elements with which they may be blended to get the desired results.

There is perhaps no other material in more common use than paper in its many forms, yet there is no common substance which has received so little attention from the point of view of the criminal investigator. The examination of a very small piece of paper by a skilful microscopist, possessing a wide knowledge of paper and the paper trade, will yield a vast amount of information, which may afford valuable evidence in relation to circumstances.

In concluding these remarks on research I cannot help remarking upon a subject intimately connected with both paper and research, viz., the paper upon which the records of our research work is printed. A very large percentage of scientific journals and literature is printed on paper of little permanence. In view of the extensive nature of such publication, and

Mr. F. J. D. Barnjum extends a cordial invitation to the Canadian Society of Forest Engineers and visiting Foresters to an informal Luncheon at the Mount Royal Hotel January 24th, at one o'clock.

the necessity of providing students and workers with their necessary literature at a reasonable price it is out of the question to suggest that all such records should be printed on permanent paper of high quality as some idealists have proposed. I am of the opinion, however, that all scientific societies, and journals containing records of research, should make provision for the printing of a limited edition of their literature on a permanent paper for filing in their own and other important libraries.

SIR WM. PRICE, PRESIDENT CHARLES WALMSLEY & CO., LIMITED (CANADA)

Following arrangements made between Sir W. G. Armstrong Whitworth and Co., Limited, of London, England, and Charles Walmsley and Co., Limited, of Bury, England, the Longueuil plant at present owned by Armstrong-Whitworth of Canada, Limited, is being turned over to a new Canadian company called Charles Walmsley and Co. (Canada), Limited. The re-organized plant will be opened up at once for the manufacture of pulp and paper machinery and general engineering work, thus resuming activities after a cessation due to the removal of the war-time demand and the recent slump in the steel trade. This announcement is made through the Pulp and Paper Magazine by D. E. Grant, who has just completed the arrangement.

SIR WILLIAM PRICE,
President, Charles Walmsley & Co., Canada, Ltd.

The Canadian board of the company is not yet completed. Sir William Price is president and other directors are F. H. Anson, vice-president of the Abitibi Power and Paper Company; Hon. G. G. Foster and H. B. Walker. The management of the new company will be entirely under the control of the Canadian board of directors, who will, when they consider it advantageous to do so, obtain assistance from the parent companies in technical operating and administrative matters.

The equipment of the plant will be entirely modern and complete. The present steel foundry at Longueuil will be extended by the addition of a grey iron and semi-steel department, while the machine shop will be organized on the most up-to-date lines.

The city of Longueuil has made an amendment to its agreement with the company securing freedom of taxation on the plant while in operation.

Some Achievements

The name plate of Charles Walmsley and Co., Limited, is a familiar sight in Canadian paper mills. They supplied the newsprint machines at Price Brothers' mills at Kenogami, but perhaps their best-known achievement in this country is the monster 232" newsprint machinery at Iroquois Falls mill of the Abitibi Pulp and Paper Company. At present they are building, in England, paper machines for the Belgo Paper Company; the Bathurst Lumber Co., Price Brothers, and the Donnacona Company, etc., in addition to several machines for English and other mills.

The policy of the new company will be to carry out the whole of Charles Walmsley's Canadian business and to acquire the necessary rights to manufacture other specialties so as to form a complete line of equipment for pulp and paper mills and hydro-electric installations. Agreements on these lines have been already concluded with Sir W. G. Armstrong-Whitworth and Co., Limited, whereby the new company acquires rights for the manufacture of water turbines, water and steam valves, Pelton wheels, hydraulic pumps, lock gates, and sluice valves, etc., etc. It has also obtained the rights to manufacture the specialties of the Watford Engineering Works, Ltd., which include their well-known "Tremor" Strainer. Similar arrangements have been completed with Gwynnes, Limited, of Hammersmith, London, covering their universally known "Invincible" centrifugal pumping machinery and announcements will be made shortly as to magazine grinders, etc. All agreement rights will include the supply of working drawings, technical information and supervision.

CONVENTION AIMS TO POPULARIZE FORESTRY

Forestry means more than growing trees. It means new population, new industries, new revenues to lighten taxation. These popular sides of forestry will have full play at the open convention of the Canadian Forestry Association, Monday, January 22nd, at the Mont Royal Hotel, Montreal. The speakers include Hon. L. A. Taschereau, Hon. Honoré Mercier, Hon. W. R. Motherwell, Dominion Minister of Agriculture, Dean Toumey of Yale University and Dr. Clifton D. Howe of Toronto. Hon. Mr. Motherwell will tell his Montreal audience the plain facts about tree planting on the prairies and what that means to the farmer's success. Dr. Howe will disclose little-known facts concerning the ability of the forests to support communities and how Canada's population has suffered from mistaken forestry policies.

Four reels of brand new motion pictures will be displayed and indeed pictorial illustrations will feature nearly all of the addresses.

Nobody works harder and gets less for it than the hypocrite.

Mr. F. J. D. Barnjum extends a cordial invitation to the **Canadian Society of Forest Engineers** and visiting Foresters to an informal Luncheon at the **Mount Royal Hotel January 24th,** at one o'clock.

The Last Word on the C. P. P. A. Meeting

The following revised program of the annual meeting of the Canadian Pulp and Paper Association on January 24, 25 and 26, will show the wide activities of the Association. All the meetings will be held at the Ritz Carlton Hotel, unless otherwise stated:

Wednesday, January 24

10 a. m. and 2 p. m.—Technical Section, Ball Room. O. F. Bryant, Chairman.

Thursday, January 25

10 a. m. and 2 p. m.—Technical Section, Ball Room.

10 a. m. and 2 p. m.—Woodlands Section. Vice-Regal Suite. R. P. Kernan, Chairman.

10 a. m.—Felt Section, Association Rooms, 701 Drummond Bldg. W. E. Walker, Chairman.

10 a. m.—Board Section, Association Rooms. D. F. Robertson, Chairman.

1 p. m.—Joint Luncheon of Technical and Woodlands Sections.

2.30 p. m.—Book and Writing Section, Association Rooms. Jean Rolland, Chairman.

2.30 p. m.—Tissue Paper Section. Association Rooms. George Carruthers, Chairman.

2.30 p. m.—Coated Paper Section, Green Room. George Pauline, Chairman.

3 p. m.—Sulphite Pulp Section, Green Room. T. J. Stevenson, Chairman.

3.30 p. m.—Kraft Section, Green Room. C. R. Whitehead, Chairman.

4 p. m.—Mechanical Pulp Section, Green Room. F. W. Clarke, Chairman.

The several Sections will elect chairmen for the ensuing year at these meetings and notify the Secretary of the Association of their choice.

9 p. m.—Informal Smoker given jointly by the Technical and Woodlands Sections in the Grill Room.

Friday, January 26.

10 a. m.—Annual meeting Canadian Pulp & Paper Association. Vice-Regal Suite.

Proposed Amendment To By-Law X

Notice has been given that a motion will be offered at the Annual Meeting of the Association to amend By-Law X to read as follows:

ARTICLE X

DUES

The annual dues for members shall be based upon the actual quantity of products manufactured for sale and shall be assessed on the following basis:

On Mechanical Pulp, two cents per ton; on Chemical Pulp, three cents per ton; on Newsprint, Boards, Wrappings, Sheathing and Miscellaneous, four cents per ton; on Book Papers, Writing, Coated and Tissue Papers, five cents per ton; provided that no member shall be assessed for an amount less than One Hundred Dollars per year.

Members located on the Pacific Coast shall be assessed on the basis of 50 per cent of the foregoing amounts.

Dues shall be payable quarterly in advance on the first day of January, April, July and October, respectively, in each year, and shall be assessed on the tonnage for the preceeding quarter, as reported by the members to the Association.

The Executive Council shall have power to make special assessments upon members whenever such assessments are found to be necessary.

By-Law X, now reads:

ARTICLE X

DUES

The annual dues for members shall be as follows: [illegible] actual quantities of products available for sale.

On Mechanical Pulp two cents per ton, on Chemical Pulp three cents per ton on Newsprint Board Wrappers Sheathing and Miscellaneous, four cents per ton; on Book Papers, Writing, Coated and Tissue Papers, five cents per ton.

The Executive Council shall have power to make special assessments upon members as such assessments are found necessary.

The annual meeting of the Newsprint Section will be held in the Vice-Regal Suite immediately upon the adjournment of the Association meeting. George Chahoon, Jr., Chairman.

The Luncheon and Dinner

1 p. m. Annual Luncheon in the Ball Room.

The speakers at the Luncheon will be:

Sir Edmund Walker, C.V.O., LL.D., D.C.L., President of The Canadian Bank of Commerce, Toronto, Ont.

Mr. S. E. Thomason, Vice-President American Newspaper Publishers' Association and General Manager, Chicago Tribune, Chicago, Ill.

(Tickets for the Luncheon may be obtained from the Secretary's Office in the Green Room.)

7 p. m.—Annual Dinner, Ritz Carlton Hotel, preceded by a reception by the executives of the Association.

The principal guest of honor will be Prof. Stephen B. Leacock, McGill University, Montreal.

Newsprint Service Bureau

C. A. Babcock, President

R. S. Kellogg, Secretary

Thursday, January 25

2 p.m. — Cost Accountants and Engineers. Ritz-Carlton Hotel.

It is proposed at this meeting to continue consideration of subject discussed at the Woodlands Section Meeting in the morning.

Friday, January 26

3 p.m. — Meeting of Newsprint Service Bureau, Vice-Regal Suite.

Technical Section

O. F. Bryant, Chairman

Annual Meeting, Wednesday and Thursday, January 24 and 25, in the Ball Room.

PROGRAM

Wednesday, January 24

10 A.M.

Business Meeting —

Minutes of preceding meeting.

Chairman's Address.

Reports of Standing Committees.

Appointment of Committee on Nominations.

Paper — "Functions of Press Felts," by E. A. Rees, Director of Research, F. C. Huyck & Sons. Albany, N.Y.

Discussion.

Adjournment for Luncheon.

2.30 P.M.

Paper — "Stock Saving With or Without Save-Alls" by Mr. E. J. Trimbey, Trimbey Machine Works. Glens Falls, N.Y.

To be followed by discussion by Mr. L. E. Kendall of the Abitibi Power & Paper Co. Ltd., Mr. Morrison, Oliver Filter Company, and others.

Thursday, January 25

10 A.M.

Paper — "The Manufacture of Ink and the Relation of Ink Properties to the Printing of Paper of All Grades," by Mr. B. G. Ransom of the Ault & Wiborg Company, of Canada.

Paper — "The Properties of Wood in Paper-Making," by Dr. Bjarne Johnsen, of the Hammermill Paper Company, Erie, Pa.

Adjournment for Luncheon.

At the luncheon, which will be attended also by members of the Woodlands Section, a film exhibition of Tractor Operations will be given by courtesy of Mussens, Ltd., Montreal, and the Lynn Tractor Company.

A Demonstration will also be given by the Laurentide Air Service, Limited, of the use of the Radiophone in fire patrol work in the woods.

2.30 P.M.

Paper — "The Utilization of Steam in a Modern Newsprint Mill," prepared jointly by Mr. Surrey W. Slater of the St. Maurice Paper Co., Limited, and Mr. J. E. Warner, and presented by Mr. Warner. Discussion led by Mr. E. B. Wardle, of the Laurentide Company, Limited, and Mr. D. J. McLeod of the Abitibi Power & Paper Co.

Paper — "Recent Experiments in Pulp Testing," by Mr. E. P. Cameron, Paper Division, Forest Products Laboratories, Montreal.

Discussion.

Report of Committee on Nominations.

Election of Officers.

Adjournment.

The Chairman-elect will appoint Standing Committees for the year immediately after adjournment and the appointees will be duly notified.

The order of arrangement of papers is subject to revision.

Woodlands Section

Robert B. Kernan, Chairman

Thursday, January 25th, in the Vice-Regal Suite.

10 A.M.

Annual Meeting called to order.

Reading of Minutes of preceding meeting.

Discussion — "Progress of Research Work in Forestry in Canada," led by Mr. Ellwood Wilson, Laurentide Company, Limited.

Paper — "Progress in Cost Accounting for Logging Operations," Mr. L. W. Campbell, Chief Accountant, Laurentide Company, Limited.

Followed by Discussion.

Adjournment for Luncheon.

2.30 P.M.

Discussion — "How Far Can the Pulp-Mill Go in Utilizing Decayed, Insect-Killed or Other Inferior Wood in the Manufacture of Pulp," led by Dr. J. S. Bates, Bathurst Company, Limited.

The discussion will be participated in by Mr. C. S. Hawkings, Chief Chemist, and Mr. Otto Schierbeck, Forest Engineer of Price Bros. & Co., Limited, and others.

Election of Officers.

Adjournment.

Mr. G. M. McKee has definitely laid down the reins of office as president and will not preside at either the annual meeting or the annual dinner; the duties will therefore fall on Mr. H. F. E. Kent, the vice-president.

Unusual interest is being taken in the meetings by American pulp and paper manufacturers, and there will be a very large representation from across the border. The attendance of Canadian representatives will be fully up to the average.

One of the topics that has caused some discussion is the personnel of the new vice-president, who in the ordinary way takes the position of president in the following year. Several names have been mentioned for the office.

All members, visitors, and guests are requested, on their arrival, to register with the Association ,an office for this purpose being maintained in the Green Room of the Ritz Carlton Hotel.

A BUSY SHOP

(Staff Correspondence)

Your correspondent recently had the pleasure of being conducted through the plant of the Waterous Engine Works Co., of Brantford, which has recently completed ten "Waterous" type magazine grinders. Eight of these went to St. Lawrence Paper Mills, Three Rivers, Que., four being now installed and under test while the other four are in course of erec- Maurice Lumber Co., Three Rivers and four more are being finished at Brantford for the Bathurst Co. Ltd.

These grinders are of the outswinging type and have several special features, such as removeable hard bronze bearing plates for pressure foot with bronze strip in side slots. The pressure foot has hard steel shoes. The out board stone shaft bearing is cast with the foundation frame. All openings inside the stone housing are filled to prevent accumulation of pulp. The opening for stone trueing device is closed by a spring door, which prevents spilling of pulp while allowing some lateral motion. The operating stand for these grinders is now being housed for protection. The stone is driven on a shaft provided with Waterous flexible couplings.

A novel turbo rotary screen was also examined. The fan-shaped rotor casting of the former pattern is replaced by a special cone-shaped heavy bronze casting which throws the incoming pulp continuously to the screen in place of the succession of rapid thrusts produced by the fan type. This new motor is claimed to take less power and handle more stock.

A number of deckers and cylinder moulds for wet machines are in hand and much saw mill equipment. On the whole the Waterous shops seem to be nicely busy.

ELECTROCUTED.

While groping on his knees to detect a ground circuit in the electrical room at the plant of the Ontario Paper Company at Thorold on Jan. 11, Chief Electrician Thomas Gallagher, received 12,000 volts, and was electrocuted on the spot, where he was found some time later by employees of the company. The deceased was 30 years of age and had been employed in Thorold about six years. He was a native of Struthers, Ohio.

The Hammermill Paper Co. of Erie, Pannsylvania is erecting a wood testing laboratory to carry on special investigations in the chemical and physical properties of various types of pulpwood.

How Long With One Firm?

By ALBERT G. SUTTILL
Mechanical Engineer
In "Management Engineering"

Many times the writer has been asked the following question: "How long is it advisable for a good man to stay with one firm?" This question appears to trouble most employees high and low, though many are afraid to give voice to it. When a young man starts out in the industrial world, "Success," in terms of knowledge and skill, power and influence, and last but not least, money and position, is the objective he has in mind.

Almost from the start the average young man realizes that "in order to earn he must learn," and if he is worth his salt he gets down to business with his sleeves rolled up, and serves a so-called apprenticeship which he supposes will equip him to attain his objective. At the end of five or six years' preliminary training he has acquired an idea of what he is really fitted for, and what position he would like to hold. Then the question—"How long is it advisable for a good man to stay with one firm?"—begins to assert itself, and he wonders whether or not he should join in the procession of incompetents, the saddest in industry, who enter and go out of our great mills.

Remembering that we are considering the average, so-called "good man," with all sorts of initiative along certain lines, what should he do, in order to obtain his objective of "Success" in the shortest possible time?

Two Views on Roving Experience

In the August issue of this journal Oscar E. Perrigo shows the marked advantage of experience gained in "other shops than ours." On the other hand, Edward Thomas calls to attention the ignorance of the public regarding the facts of labor turnover—its volume, and its cost. In another journal we read of the presentation of an inscribed gold watch to a "bellows maker" who served over 60 years with one company, and that the same man's father was employed by the same company for 63 years.

One of our successful machine tool manufacturers says that in order to be fitted for the position of general manager in his company a man should be trained as follows:

1. Graduate from some recognized engineering college.
2. Serve four years apprenticeship as a machinist.
3. Serve four years as a journeyman machinist
4. Four years as foreman of an automobile engine factory.
5. Seven years as general manager of some other machine tool factory.

If a man decided to attain his objective quickly, by working in various factories to acquire the necessary broad experience, he is liable to be catalogued as "a floater." On the other hand, he may stay with the first firm he works for, and find after several years' hard work that his progress is blocked, because he is especially proficient in some branch of work; in other words, he has allowed himself to get into a rut. Then he will find it hard to start elsewhere, because like "the 60 years a bellows maker" he is tied to environment.

I quote here some of the most important advice of the general manager of one of the largest and best-known department stores in this country bearing on this problem:

1. Remember that the larger and stronger the organization, as a rule, the slower the progress of a beginner therein, but the greater the reward, in the end, to the one who will stick and continue to grow.
2. Advancement is inevitable, and need not be sought elsewhere, provided the young man in question continues to study as well as work. He must know his present "job" and perform its duties thoroughly, but in addition he must be climbing higher in his observation, thinking, studying, and reading, so that instead of settling into a rut he is steadily broadening in his knowledge and capacity.
3. When he finds himself sought out with offers of positions elsewhere, he may fairly conclude that he is making good progress where he is, and that in all probability, to hold on until he has reached or is ready for the top, where he now is, will do more for him in the end than to step aside for that which may offer a little larger sum immediately in hand, but is only a way station.

There are those who need to drift around from place to place, because in so doing they receive the knocks and the pressure which compel progress. There are those who have got it in them to compel their advance from within themselves. Those who can do the latter usually rise best by perseverance and continuance in the suitable thing or position first undertaken.

A PLANT UNIQUE IN CANADA

A plant for the manufacture of liquid chlorine is at the present under construction by the **Canadian Salt** Company. It will have a capacity of ten tons a day. This is the first plant of its kind to be erected in Canada. The Company is also making additions to its evaporator plant and has installed fuel economizers in its boiler room. This would seem to provide an opportunity for Canadian Bleaching plants to secure liquid chlorine, which is of course the vital element in bleaching, at a reasonable figure and may eventually bring about a change from the present use of chloride of lime. Chloride of lime deteriorates with age, is always of uncertain strength and the lime is a source of troubles which can be avoided by liquid chlorine combined with soda.

K. L. WARREN OPERATING WOLF RIVER PULP AND PAPER CO.

The Riviere du Loup property of The Wolf River Pulp and Paper Company, Limited, consisting of a six-grinder pulp mill and valuable water power rights, developed and undeveloped, has been leased and taken over by Kenneth L. Warren, a consulting engineer well known to the pulp and paper trade, and will be operated by him to its full capacity for the manufacture of groundwood pulp pending the completion of plans for the further development of the property, which include, it is rumored, the addition of a paper machine in the near future.

PULP AND PAPER NEWS

The Rudd Paper Box Company, Limited, Toronto, ushered in the New Year with the inaguration of a "Fifth Use" Club at the King Edward Hotel. In other words it was the first annual get-together of the company's executives and sales force in which trade problems were discussed and an aggressive program of business effort outline for the present year. The "Fifth Use" idea was originated by President W. P. Bennett and has reference to the use in the way of advertising and as toys and containers that the paper box can be put to after it has served its original purpose. Among those taking part in the discussions were: W. P. Bennett, president and general manager; C. W. Stephens, A. R. McKellar, F. Goodale Wheeler, D. S. Porter, W. F. Barrington, W. M. Oulster, George Garnett. The entertainment features of the gathering included a dinner and a theatre party given by Mr. and Mrs. Bennett.

L. M. Allstead, principal in the Great Lakes Pulp and Paper Company, has left Toronto for his home, and personal negotiations between his company and the Government on the matter of the 15,000 horse power contract from Nipigon are, for a time, suspended. Government authorities, however, say that they will be resumed, and with some prospect of success. It was stated last week that, if necessary, the Government is prepared to force the hand of the recalcitrant party in the negotiations.

George McRae, of the Appleford Counter Check Book Company, Limited, who has been working from Toronto to Winnipeg, with headquarters at Fort William, has moved to Winnipeg to take charge of Manitoba and Saskatchewan for the British American Wax Paper Company, with an office in the Avenue Building, Portage Avenue. He will be working Ontario as formerly.

With power, among other things, to engage in the pulp and paper business, the Millwood Lumber Company, Limited, has been granted an Ontario charter with an authorized capital of $440,000. The headquarters of the company will be at Sault Ste. Marie, Ont., and among the incorporators are E. B. Barber, R. S. McCormick, W. J. McCormick, F. W. Acheson and John L. O'Flynn.

Toronto wall paper manufacturers deny the statement made at a meeting of the Trades and Labor Council in Toronto that they offered a weekly wage of only six dollars to girls seeking employment. The two local factories, Stauntons, Limited and the R. N. Boxer Company at New Toronto, which are the only wall paper manufacturers in Ontario, stated that nothing like that small sum had been offered and that the average for the grils employed ran from $9.00 to $16.00 per week which was for unskilled labor.

It was announced last week in Toronto that William R. Young, President of the Regal Paper Box Company, Limited, 126 John Street, Toronto, had sold out his interests to the company and had withdrawn from the organization. The new president and managing director is Allan Manchester. Both Mr. Young and Mr. Manchester were formerly with the Rudd Paper Box Company, Limited, and started the Regal Paper Box Company, Limited, in 1919. It is stated that Mr. Young has organized a new company to be known as Young Brothers and that they will shortly go into the paper box manufacturing business on Ryerson Avenue.

The Standard Printing and Lithographing Company, Toronto, it is stated, are about to add to their lines the manufacture of folding cartons. Brown Brothers, bookbinders, manufacturing stationers, etc., Toronto, are installing the standard United Typothetae of America Interlocking Accounting System in their office.

A Salesmanship class for the sellers of printing and paper has been opened in Toronto under W. A. Sutherland, Secretary of the Toronto Typothetae. The class started last week with an attendance of 42. It meets every Tuesday evening in the King Edward Hotel.

According to the "British Columbian," J. J. Herb, formerly of the Interlake Tissue Mills, Thorold, Ont., who recently promoted the Westminster Paper Mills, Limited, for the manufacture of light weight papers, has his enterprise in full operation. At present the rough grades of tissue are being turned out in the plant at New Westminster and satisfaction was expressed by the President, Mr. Herb and the Secretary-Treasurer H. M. Lord at the smoothness with which the plant has started off. Pulp is brought up the river from Swanson Bay. Recently, following a luncheon in Vancouver, the heads and commercial travellers of the paper distributing firm of Smith, Davidson & Wright, Ltd., Vancouver, were the guests of the new company and were taken through the plant. Later representatives of the Norfolk Paper Company and the Columbia Paper Company, inspected the mill.

The Levis, rag and paper stocks, 98 John Street, Toronto, is putting out some propaganda literature designed to educate the school children and others in Toronto, with the slogan "Save Waste Paper and You Save the Forests." The company points out that waste paper is used as a substitute for ground wood pulp in the manufacture of many grades of paper. Every ton of waste paper that goes back to the mills means the saving of almost an equal quantity of wood pulp, and a circular states, it is a vital need that every effort to save Canadian forests be exerted.

It is further set forth that in addition to conserving our forests products, the saving of waste paper teaches thrift and neatness and provides an easy method of raising funds for school athletic supplies or establishing the nucleus of saving accounts for the children in the Penny Bank. The present price of old newspapers is 90 cents a hundred pounds and magazines $1.25 a hundred.

Warren Snyder, of the Warren Paper Manufacturing Company, New York, was a business visitor in Toronto for a few days last week.

Walter Meigs, Vice-President of the Lincoln Paper Mills, was a caller at the Toronto office of the company last week.

A. A. Cullen, representing the Miller Brothers Company, Limited, manufacturers of straw board, wood pulp board and egg case fillers, Glen Miller, Ont., was in Toronto for a few days last week attending the Produce Dealers convention. The company is just now making some extensive alterations and improvements to its plant in order to increase production and take care of the larger volume of business expected in 1923. These include an addition to the power plant and the lengthening of the board machine.

M. G. Cohen, of the Levis, rag and paper stocks, John Street, Toronto, has returned from a business trip to Montreal. The firm expect to have their new warehouse on the Don Esplanade ready about the first of the month. It will replace the one recently burned.

Isaac A. Wilcox, of the Smith Paper Company, Lee, Mass., manufacturers of light weight papers, was a visitor in Toronto last week.

Meredith F. Montague, Sales Manager for the Standard Paper Company, New York, with mills at Richmond, Va., was a caller on the Toronto paper trade last week.

The Toronto paper trade extended congratulations last week to E. H. Wilkinson, head of the Wilkinson Paper Company, Limited, Wellington Street, on the occasion of his election to the presidency of the Toronto Empire Club. Mr. Wilkinson, who has long been an active worker in the organization, succeeds Sir William Hearst.

John Martin, head of the John Martin Paper Company, Winnipeg, has gone on a western trip and will visit his branches in Edmonton and Calgary.

H. L. Wilson, head of the Winnipeg Envelope Company and of the Pioneer Envelope Company, Limited, of Vancouver, accompanied by his Winnipeg Manager Mr. Miln, has arrived in Toronto on a buying trip. He was accompanied by Mrs. Wilson.

Orville H. Moore, Managing Director of Hinde & Dauche Paper Company of Toronto, Canada, was in New York and other eastern points on a business trip last week.

James Thompson, of Thompson & Heyland Company, Bay Street, Toronto, has returned after visiting a number of the paper mills in Tyrone and other points in Pennsylvania.

At the annual meeting of Thompson & Heyland, Bay Street, Toronto, a few days ago, James Thompson was elected president; A. J. Bailey, formerly Secretary-Treasurer, was elected Vice-President, succeeding the late E. R. Heyland. A. E. Breckinridge was elected Secretary-Treasurer of the company which is now busy shipping pulpwood from Northern Ontario points to Pennsylvania, New York and the Thorold district. They have already shipped on 1923 contracts between fifteen and twenty thousand cords. The company reports considerable call for poplar at the present time. At the first meeting in the New Year in Toronto of the Toronto members of the Canadian Paper Trade Association conditions for 1923 were talked over and it was generally agreed that the coming twelve months would show a steady increase in business and a large demand of paper and paper products all round. C. W. Graham, of Buntin, Gillies, Limited, Hamilton, a former president of the Association, was among those in attendance.

Mr. John Taylor, secretary and sales manager of the E. B. Eddy Company, Hull, was a visitor to Montreal last week.

Mr. Harold Wilson, of the Wilson Stationery Company, Winnipeg, made a business trip to Montreal last week.

It is expected that the new mill of the Provincial Paper Mills, Limited, Port Arthur, will be in operation by the end of the month. The mill, designed by H. S. Taylor, Limited, is equipped with a 146″ Book machine, built by the Dominion Engineering Works, Limited, Montreal.

CATALOG OF PAPER MILL MACHINERY

The Noble and Wood Machine Co. of Hoosick Falls, N. Y., has prepared an excellent catalog of their paper mill equipment in which they have been specializing for more than twenty-five years. Their catalog is an excellent piece of work and should prove of great value to engineers and paper mill men generally.

MR. F. N. McCREA,
President, Brompton Pulp & Paper Co., Ltd.,
who was 71 years old on Sunday. Mr. McCrea has our best wishes for a speedy recovery from his illness.

HOW MAPS AID IN SELLING

Keeping tab from day to day on a large number of salesmen over a big territory like Canada is a man's sized job. With the hundred and one other demands upon the sales manager's time, it is very doubtful if, in a large firm, it could be handled satisfactorily without the aid of good maps, coloured ribbons and chalk, and thumb tacks. These enable the sales manager to visualize his territory, sales routes and the position of every salesman at a given time. Sales possibilities of territories and results accomplished can be shown with ease in a most graphic manner.

Good maps, however, are absolutely essential. In many of the older countries large map-making firms have sprung up to fill the need for commercial maps, but the Canadian business man is more fortunate in that the Dominion Government will supply him with official maps for the asking. The Natural Resources Intelligence Service of the Department of the Interior at Ottawa is the organization which has charge of making and distributing these maps. Some of them cover the entire Dominion, others are published in separate form for each province, while in certain localities, particularly Eastern Canada, large-scale sheets for each district are available.

BRITISH TRADE NEWS.

From Our London Correspondent.

London, Dec. 28, 1922.—Owing to the Government's way of doing business in adjusting financial matters relating to the Excess Profits Duty—they were quick enough to capture them when the tax was made—the Wallpaper Manufacturers' Ltd. could not present their accounts to the shareholders meeting the other day. It it a deplorable state of affairs. The meeting was consequently postponed, but the chairman, Mr. Edgar Smith, anticipates being able to place the accounts before the shareholders at an early date.

Mr. Smith stated that there are distinct signs of improvement in the wallpaper industry, justifying shareholders in adopting an optimistic attitude, which was more than could be done during last year. In 1921 the company made a loss of £878,108. Now the arrears of preference dividend have been paid, as well as an interim dividend of 4 p.c. on the ordinary shares.

The Outlook for Paper.

Comparing the present with this time in 1921, I feel more optimistic, more hopeful, for the future. The past twelve months have worked wonderful changes in the British paper industry; indeed, I never anticipated that changes could be wrung so successfully amidst depression and depreciated money markets in Europe. The position today is really a bright one and from what I can hear the Conservative Government in power is working swiftly and quietly to improve trade, as well as to rectify the misdeeds of the spendthrifts just turned out of office.

There are two elements I look for in a time like the present—one, the employment register; two, the consumption of pulp. Now paper makers are not going to buy pulp for the fun of buying it. They are too hard-headed for such expensive pastimes. Therefore, if the paper industry is progressing pulp is being consumed in larger quantities. That is the position today, and I am nearly sure that when the twelve months' returns are announced in January, the consumption of pulps will be on a par, if not greater, than the 1913-1914 figures. Now, on the employment side of the question, considering the present conditions prevailing, the number of men unemployed is not great. We must always have a certain amount of unemployment with us. It would be an absolutely perfect industry that could be run without unemployment, and in England they do not prevail. Therefore, considering that the British paper industry is not yet on an economic basis, and many firms are not paying their way, it speaks volumes for the ingenuity, the methods, and enterprise of the mill owners to record that paper consumption is on the increase, employment is improving, markets are being recaptured, and there is a complete transformation compared with a year or two years ago. It only wants the rates of exchange to be adjusted and trade opened up in Europe to give the British industry a final blessing.

Some people may ask, how was this all achieved? Well, there are various elements, but I attribute the progress to dumping good smart travellers and representatives in foreign and colonial markets, and a greater development of science and technical work, combined with sound business common-sense, at home in the mills. British papermakers have to tighten their belts now in the scientific world. They are competing at home in a market with the cheapest products of the scientific world and the mill that cannot hold its own is not paying, for the reason that it wants new blood in it. The period of stepping round the corner to enjoy a cigar and get an order is past. We are in an age of progress—but there are some, I am sorry to say, who do not realise it.

Higher Prices.

There is one thing certain in the new year and that is prices will be higher—if foreign imports permit. Newsprint mills are getting plenty of orders; wrapping mills are in a fair way, but not to say a prosperous way until a greater revival is brought about in the textile trades, which are at present dull; producers of paper containers are doing fair, but the foreign imports are cheaper—the industry, however, is still in a small way; other makers of printing and hand-made papers, stationery, etc., are in a fair way of trade.

Prices of paper will have to stiffen if paper mills are to enjoy a greater amount of profit than they enjoy now. Foreign products have kept prices down, but the British mills feel that the time is ripe for quotations being placed on a higher level and many have already taken a step in this direction. Considerable caution, however, has to be exercised.

The Pulp Outlook.

Recently a good many visitors to Scandinavia, Canada, America and Finland have been expressing their views on the pulp outlook, the conditions prevailing, and prices. These views have all been interesting and they gave a good outline of the progress of events. But, probably the most interesting of all pulp news to Canadians is the development of trade with British buyers of bleached sulphite, unbleached chemical, mechanical dry and mechanical wet. When the figures for 1922 come to be totalled up next month, it will be found that Canada occupies a very prominent position.

The pulp situation is good in England and the outlook is good so long as the paper industry keeps on the line of progress. As things are, mill owners are placing orders for prompt and forward deliveries, particularly in the newsprint section. But there is still a strong disposition on the part of papermakers to beat down prices as low as possible and this beating down process worries the pulp men considerably. The papermaker is out for production at the minimum cost, in order to compete with the foreign elements and rivals, and if he is to succeed he must tackle his raw materials as well as his labour costs. Therefore, the pulp men come in for a share of hard bargains and there is also an inclination on the part of one firm from abroad to go under the quoted price of the London firms for the sake of saying, "We are doing business with English mills." That is how things stand, but most of the good paper mills have their own agents to buy pulp from, because they know the pulp can be relied on. And amongst the pulps Canadian enjoys a very good reputation, I am glad to say. For years I have advocated its use and it is now good to see Canadian enterprise succeeding.

Mill Results.

The accounts of the Bury Papermaking Co., Ltd., Bury, show a loss on trading account of £6,725. The total debit balance of the mill now stands at £33,627.

The Cutter Mills Paper Coy., Aberdeenshire, have issued at par £125,000 6 1-2 first mortgage debentures.

Caldwells Paper Mill Co., Ltd. directors are unable to call a meeting of the shareholders, as the Government are holding up the firm over the adjustment of the Excess Profits Duties.

UNITED STATES NOTES

The Hammermill Paper Company, Erie, Pa., maker of "Hammermill Bond," is putting out through A. G. Becker & Co., of New York and Chicago, a new issue of $3,000,000 seven per cent. cumulative preferred stock. The par value of the stock is $100, it is preferred as to dividends and is redeemable as a whole or in part at $110 per share and accured dividends Dividends will be paid quarterly, April, July, October and January. The active management will continue in the hands of the men who developed the business, who will retain control through the ownership of a majority of the common stock.

An interesting exhibition of planographic printing, including lithographing, direct and offset printing on metal and paper, was opened at the recent monthly meeting of the American Institute of Graphic Arts at the Art Centre, New York City. It composed the latest auto lithographs of artist lithographers. One of these, Bolton Brown, explained the methods. Other speakers were Dr. Fred Weitenkampf and S. H. Horgan. The exhibition was opened to the public for two weeks, beginning January 12.

According to *Popular Mechanics*, a German textile expert has discovered a process by which cellulose can be hardened sufficiently to produce synthetic woods that will serve as substitutes for oak, mahogany, walnut, indeed for any hard wood. Moreover, the material can be dyed homogeneously in any color, from bright yellow to deep black, and can then be polished and made to look exactly like natural wood. The synthetic product will be much cheaper than real wood because it is made from vegetation available in large quantities, much of which is otherwise of little or no value, such as straws of all kinds, banana and other leaves, and any kind of grass. In all its characteristics it resembles hard wood, not being brittle like many other cellulose products.

On the basis of not more than $14 sale price per thousand board feet—whereas the current price is $19—Professor Fenska, of Syracuse College of Forestry, figures that artificially planted white pine forests, with fifty-year cut-over, on land now waste, would yield aprofit of 5 per cent. compounded annually.

The McKenny, Williams Corporation, recently incorporated in New York to engage in the manufacture of corrugated paper materials, has leased buildings in the Eastern District of Brooklyn. The lease is for a period of years at rentals aggregating about $175,000. The buildings have available more than 50,000 square feet of floor space.

The semi-annual report of the United States Paperboard Company shows net earnings of $121,158 for the six months ended November 25, 1922. The balance sheet on that date showed current assets of $1,137,333 against current liabilities of $384,295. Total assets and liabilities $12,331,166. The net profit shown contrasted with a net loss of $96,116 for the corresponding period of 1921. Profits before deduction of expenses and taxes amounted to $223,612 compared with a loss of $906 in the same period of the preceding year.

The Perkin medal, presented annually for the most notable achievement in chemistry by the American section of the Society of Chemical Industry, was awarded last Friday night to Dr. M. C. Whitaker, at the Chemists Club, New York City. Dr. Whitaker has been professor of chemical engineering at Columbia University, for six years. The award to Dr. Whitaker, it was explained, was made in recognition of a series of achievements in the continuous production of ethyl acetate made by himself and a corps of research chemists working under his direction. Ethyl acetate is a compound used as artificial leather, varnishes and lacquers, smokeless powder, motion picture and photographic films, artificial silk, perfumes, and plastics like celluloid and pyroxylin. Large quantities were used during the war in the manufacture of a weather proofing preparation for airplane wings and large quantities are in demand now in the manufacture of automobile tops and in upholstery.

Mr. E. R. Behrend, President of the Hammermill Paper Co., left Saturday, 6th January, for a trip around the world.

Philip T. Dodge, President of the International Paper Company, in the course of an interview given to a Metropolitan press representative last Friday, expressed the opinion while commenting upon the occupation of the Ruhr that it might as well be ackuowledged by the French, and by all nations, that the affairs of the world cannot be composed until Germany is enabled to come back. He said he regretted the occupation of the Ruhr. Mr. Dodge said that during his recent trip into Germany, he was impressed by the fact that the Germans were working "morning, noon and night." "The wage earners in Germany," he said, "are suffering the least of all classes in Germany. They are getting the necessities of life and none of the luxuries. For them conditions have not been so radically changed as for some other groups. As to what becomes of the product, I should say that most of it is for domestic consumption. The Germans are trying to fill the gaps made in output during the four years of war."

Mr. M. Harrison, employment manager of the Hammermill Paper Co., Erie, Pa., is seriously ill with neuritis, brought on by influenza.

PROGRESS IN HYDRAULIC ENGINEERING—1922

Dominion Engineering Works Limited, Montreal, are distributing an excellent review of this subject. This publication is a book of about 70 pages, 9x12, well illustrated by cuts and charts. It contains the principal papers at the 1922 Hydro-Electric Conference held under the auspices of the Engineers' Club of Philadelphia and the American Society of Mechanical Engineers and allied bodies. The hydraulic and electrical features of the Queenston-Chippewa Power Development are described in some detail. The rapid development of the hydraulic turbine within the past few years has brought forward many new problems, and how some of these have been solved is outlined in a paper by H. Birchard Taylor and Lewis F. Moody, "The Hydraulic Turbine in Evolution."

The book will be sent on request to hydraulic engineers or water power owners.

GUMMED TAPE O. K. FOR PARCEL POST MAIL

A new use for gummed tape was an outstanding development of the Christmas season just closed. Special regulations by the post office department provide for the mailing of fourth class mail, parcels post, in packages sealed by gummed tape.

Hitherto, any package which was sealed, would require first class postage, but the new provision carries definite regulations authorizing, and in fact encouraging the use of gummed tape on package mail.

A special bulletin of the New York Post Office makes this statement, after indicating how sealed fourth class mail should be marked to indicate it comes under the the new provision.

"Handstamping or writing the foregoing (form for mailing sealed fourth class merchandise) does not meet the requirements. The indicia should be printed so that the labels will be uniform and legible, thus facilitating the identification of the sealed parcels as entitled to be mailed under this provision. When desired, the statement as to contents, etc., may be printed on gummed paper tape, which is used by some shippers for sealing their parcels."

Postmaster E. M. Morgan, in a letter to Secretary Jacob Erichsen of the Gummed Paper Manufacturers Association says, "In order to be assured that any tape which you propose to prepare will comply with the regulations it is suggested that a sample or specimen be presented at Room 224, General Post Office, 33d Street and 8th Avenue, where any further information desired will be cheerfully furnished."

Several big New York houses mailed parcels for their customers, sealed with gummed tape specially printed under the provisions of this regulation. Others used gummed paper labels, carrying the required inscription.

The International Paper Co. are canvassing New Brunswick for possible users of power that might be developed at Grand Falls. The company's rights to the power site expire on April 1st. after having term extended for a period of two years.

We regret to report the death of François Jean, an employee of Fraser Companies at Edmunston, N. B. He was crushed under bundles of pulp. He was a married man, about 55 years of age.

A LITTLE TALK ON THRIFT

By S. W. STRAUS,
President American Society for Thrift

It is well to understand that the mere saving of money is not the sum total of thrift. This is a point that frequently is not given sufficient attention. Too often thrift is considered synonymous with tight-fistedness.

If it were true that thrift consisted merely of a narrow-minded process of hoarding, this country would never have attained its present exalted place because most of our national leaders have been successful primarily through thrift.

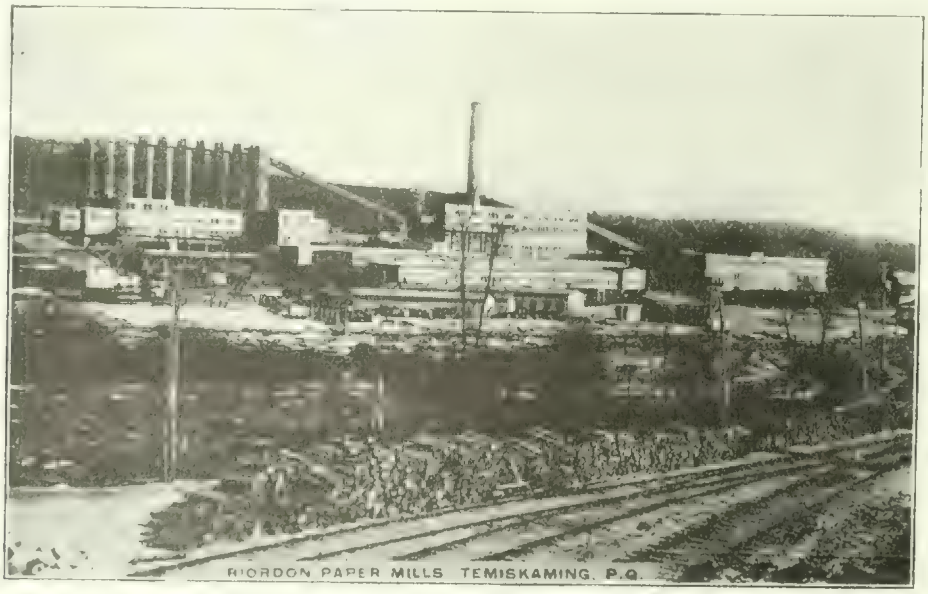
Thrift is no more the manifestation of selfishness and small mindedness than is success itself. Thrift does away with waste. It is careful planning and wise spending. It is efficiency and progress. Washington once advised a friend that "it is not the lowest priced goods that are always the cheapest." And in this advice he reflected one of the great truths of thrift. Spend money savingly. Save money sensibly.

We have had too much one-sided teaching on this subject. Too much emphasis has been placed on the word "Save" and not enough on the word "Thrift" in its broad, progressive sense.

Let us understand more fully that it is essential to save with prudence. It is also just as necessary from the standpoint of progress that we learn how to spend wisely, and achieve success through the exercise of good judgment and rightful transactions.

It would not be possible to extol too highly the simple virtue of saving. Since the dawn of human progress, it has been one of the most necessary of all personal practices. Every encouragement should be given to those who are saving. But the good work should not stop there. It is sometimes the better part of thrift to spend a dollar than to save it; and more economical to purchase an article for \$10 than for \$5. The right kind of spending keeps business going, creates demand for labor, builds up our cities and offers incentive and reward for enterprise and proficiency.

Unless we understand and practice all of these things we do not comprehend thrift.



An excellent view of the Kipawa Plant of the Riordon Co., where the highest grade bleached sulphite fibre is produced

Courtesy of "Mead Co-operation"

The Markets

CANADIAN TRADE CONDITIONS

Montreal, January 16. Now that the year has turned, and stock-taking is practically over, business locally is opening up in satisfactory fashion on all hands. There are reports that jobbers are finding a gradual improvement; and that, although the orders are not, as a rule, of large volume, they are more numerous. Some of them are still of the rush description, and consequently the jobbers are compelled to give the mills short notice. The jobbers are still disinclined to buy for more than immediate requirements; apparently the days of carrying heavy stocks are over.

There is little that is new in the newsprint department. There is no let-up in the demand, and Canadian mills are producing to about capacity. As far as can be seen, the call for paper will continue on a large scale, and the new output which will come on to the market will command a ready sale. There are those who are sceptical as to the power of the market to readily absorb all the additional production, believing that Canada is forcing the race too strongly. But at present there is no indication of anything like a break in the demand.

In most other lines, trade is fairly good. Wrappings are readily bought, while toilets and tissues are being ordered in substantial quantities. Book, writings, cards and ledgers are in moderate request. The market for waste papers is firm, with many inquiries for rags for low felts and paper.

In the pulp department, groundwood, which softened for a time, is now recovering. The easier tendency was due to better water conditions, enabling additional grinders to operate; the water however, is rapidly disappearing, owing to more severe weather conditions, and this has resulted in a shorter supply of pulp and a stronger market. Unbleached sulphite is dull, there being comparatively little demand for the Canadian product, but bleached sulphite is in much better request. Orders, which were held up for a short period, are now coming freely. Generally speaking, the outlook for our pulp is very satisfactory. The indications are favorable to a continuance of the heavy output of paper in the States, with a consequent free market for Canadian production.

In connection with this question, and the imports into the United States from Sweden, there is some interesting information in the Economic Review issued by the Swedish Foreign Office for December, 1922. It states: "The wood pulp market is still characterized by brisk sales and a rising demand. Until recently there was a disproportion between the stocks on hand of paper and those of pulp, and prices for wood-pulp could not increase before a considerable part of the stocks of different paper qualities has been disposed of. This process seems to have taken place in the autumn of 1922 and pulp prices have advanced accordingly. However, fine paper mills are not yet booked full for a very long time ahead. The demand for sulphite and dry mechanical pulp is somewhat greater than for sulphate and mechanical wet pulp."

Figures of exports for the last two quarters as compared with the figures for 1913 are given, and it is stated:—

"As compared with pre-war conditions the main features is the extraordinary advance of the United States as consumer of Swedish wood pulp. At present U. S. A. and England take nearly one-third each of the total amount exported. If value is taken into consideration instead of weight, America's position should be predominant as exports of Swedish pulp to that country mainly consists of chemical qualities while a considerable part of the exports to England is mechanical pulp, the price of which is only about one-half of that of dry cellulose."

Toronto Market News

Ontario pulp and paper men both manufacturers and distributors—are fairly well satisfied with the volume of business that the first half of the opening month of the new year has brought and in every department of the trade there is a general spirit of optimism. It is conceded, however, that it is early yet to attempt any prediction as to what 1923 is going to produce in the way of business conditions in the pulp and paper line, although the trade generally views with satisfaction the apparent stabilization of the market in most lines and takes the view that this favorable condition is going to last and that prices will continue to show an upward trend rather than downward. That both mills and jobbers anticipate a good demand for paper during the coming months is indicated by the preparations being made to take care of increased business in the way of increased plant and strengthening of organizations generally. That there will be great development in the industry in Canada during the year and that the Ontario manufacturers and distributors are going to participate in it to a large extent has already been made plain by programs of expansion that are under way in the various pulp and paper districts of the province, and which have already been noted from time to time. At the moment most of the mills are busy, with considerable orders ahead and the jobbers report that while they are not taking any very large orders, there is a satisfactory volume of smaller business which will make the month's operations bulk fairly well.

PULP.—Groundwood pulp continues to climb and most of the paper mills are experiencing considerable difficulty in getting supplies. This is due to restricted production consequent upon the low water conditions that have prevailed for some time at the pulp mills. The market in groundwood continues firm with a strong upward tendency. Paper makers who were paying $49.00 for the product in December are this month paying $56.00 laid down Toronto, and some sales at slightly higher figure are reported to have been made.

Bleached sulphite is quoted at from $100 to $110 and unbleached at $70, with news grade at around $60. Kraft pulp is selling at $75.

TWINE.—There is a fair demand for most lines of twine and prices are on the upward trend. Jute twine has been advanced by one of the mills and it is likely that there will be a general advance before long. Cotton twine has also gone up 3 cents per pound, the mill price now being on a basis of 49 cents, coned.

WRAPPING PAPERS Mills are busy on these lines and jobbers report a fairly active market and satisfactory sales which have been helped out greatly by the cold weather that has apparently set in. For the most part wrappings are in good call and prices are holding firm.

BOOKS AND WRITINGS. Manufacturers of these lines report fairly large requisitions and the book mills, particularly, have orders on hand sufficient to keep the machines running for a couple of months, while they say that the outlook for a sustained demand during the year is good. Prices remain firm and unchanged.

TISSUE AND TOILETS. This class of paper, and light weight papers generally, are enjoying a well-sustained demand, and there is no diminution in the activity of the mills which have been running at practically full capacity for months. Manufacturers are anticipating a good volume of business during the present year.

RAG AND PAPER STOCKS.—Demand for both rag and paper stocks by the paper mills keeps up fairly well for this time of the year, although Canadian mills are paying less for their stocks than those across the line with the result that considerable shipments are crossing the border. The following prices prevail: No. 1 hard white shavings, $3.75 to $3.80; No. 1 soft white shavings, $3.40 to $3.50; heavy books and magazines, $2.25 to $2.55; ledgers and writings, $2.50 to $2.75; No. 1 kraft, 2 to 2½c; newspapers, $1.35 to $1.40; No. 1 mixed papers, $1.15; No. 2 miscellaneous, $1.10; No. 2 miscellaneous, 11.10; cotton rags, No. 1 white, 3½ to 4 cents; thirds and blues (repacked) $1.75 to $2.00; roofing rags, $1.05 to $1.15; No. 1 white shirt cuttings 9½c to 10c; fancy shirt cuttings, 5½ to 5¾c; canton flannels bleached, 8½c to 9c; white lawns 9¼c to 9½c; blue overall cuttings, 4½c to 5c; No. 1 scrap bagging, 75c to 80c; No. 1 manilla rope, 6c to 6¼c; mixed strings, 70c to 75c.

NEW YORK MARKETS

New York, January 13.—(Special Correspondence). —Production of paper in the United States in November was only slightly below that of the preceding month, or within close proximity of the record month's output for 1922 in October, according to the Federal Trade Commission's report on the paper industry just issued for November. There was a total of 641,544 net tons of all kinds of paper and board produced by paper mills in this country in November, compared with 644,267 net tons in October, 535,876 net tons produced in November, 1921; 518,144 tons in November, 1920, and an average monthly output based on reports covering the past five years of 504,175 net tons. In other words, November paper production was some 137,000 net tons in excess of the average output in each month for the past five years, which, as can be readily seen, means that the paper manufacturing industry of this country worked at a busy rate during November.

In spite of the large output of paper in November, mill stocks of the commodity decreased somewhat during that month. At the beginning of November mills of the country held a total of 239,833 net tons of paper of all kinds, and at the end of that month stocks had been reduced to 238,101 net tons, thus showing that manufacturers not only shipped out all of their current production during the month but also a part of their surplus holdings.

Increasing activity and strength in prices of paper-making raw materials have continued to feature the markets in New York this week. Some kinds of paper-making raw stocks are characterized by booming market conditions, notably waste paper and roofing rags. The effect of the rapidly advancing prices of raw material on new paper prices is quite perceptible. There is a tendency to stiffen all round. No manufacturer or dealers seems willing to commit himself on any great tonnage of paper for any appreciable time ahead unless at a sufficient advance in price to protect him against any further rise in market levels, and the growing strength in the undertone of the market is becoming plainly manifest in practically all corners of the trade.

There has been a sharp jump in quotations on box board. Evidently this is due to the rapid increase in prices of old waste paper recently, which has put the board manufacturer's cost of production considerably higher, though signs are not wanting that demand for board also has expanded substantially. Plain chip board is quoted at present at about $65 a ton f.o.b. New York, and news board at $70 per ton, which prices represent an appreciable advance from the levels of around $52.50 on chip and $55 on news board prevailing only a few days ago. Leading board dealers and mill agents in New York report that demand for box boards is showing surprising volume for the first month of the year. Ordinarily the board trade witnesses little important activity in January, but this month, it is stated, there has been a consistently good demand from box manufacturing concerns.

It is observed that consumption of newsprint has been up around the high mark this week in New York. The annual automobile show has been on since last Saturday in this city and local newspapers have printed large issues to carry all of the motor car advertisements. One of the morning dailies printed an issue of 48 pages three or four days during the week, and the other papers have been proportionately as large. If it were possible to secure actual statistics from the publishers, it would doubtless be found that newsprint consumption in this city this week exceeded even that of any week during the recent pre-Christmas period, and this is saying a good deal as newsprint consumption was of record tonnage prior to the holidays.

Reports regarding the fine paper branch of the industry are generally favorable. Demand for bonds and ledgers is constantly increasing, and mills making these kinds of paper are finding it necessary to expand their output. Prices of fine papers are firm, and the slow but steady rise in raw material is making for an extremely strong market condition, with higher prices in prospect. Wrapping papers also are enjoying a good demand at steady prices. Tissues are not quite so active as they were, but toilet tissue, napkins and towels are finding a ready market in large quantities.

GROUNDWOOD.—Increasing firmness in prices is the feature of the groundwood market, and transactions at new high price levels have been recorded this week. Prime spruce ground wood for prompt shipment has advanced to around $45 per ton f.o.b. producing plants, and it is stated on good authority that not a whole lot of mechanical pulp is available at this price basis. Sellers are reported insisting firmly on at least $45, and it is asserted that in some cases even this figure has been exceeded in sales.

That ground wood is in a strong technical position can be seen from the figures included in the Federal Trade Commission's report on the wood pulp industry for November. At the end of November ground wood stocks at producing mills in the United States totalled 80,212 net tons, compared with 95,339 tons held at the beginning of that month, which means that mill holdings were reduced by some 15,000 tons despite an increase in production in November over October of about 18,000 tons. These figures would seem to bear out the contention of dealers that ground wood stocks are unusually light, and explain why producers in a great many cases are refusing to offer groundwood in the open market while bent on conserving supplies for their own use.

CHEMICAL PULP.—The market for chemical pulp displays a firmer tone than recently was the case. No important changes have developed in prices but there is a tendency among importers and domestic manufacturers to quote full market levels and to refuse to do business at price concessions which many consumers ask for. Demand shows gradual improvement. Papermakers are returning to the market as buyers following the holiday lapse in trading rather slowly, yet they are evincing much interest, and sales are on the increase, both as regards number and volume. Kraft pulp appears to be stiffening in price. Most sellers want at least 2.85 cents per pound for Scandinavian kraft on the dock here, and some quote beyond this figure. It is understood that a strike has been declared in some of the kraft pulp mills in Sweden and it is felt here that this may lead to a reduction in available supplies, thereby enhancing the value of any pulp on the spot in the States or en route to this country. Sulphite is steady and only occasional instances are cited where sellers are accepting orders at below asked prices. Soda pulp also is steady at around 4.25 cents per pound at producing mills.

RAGS.—Roofing stock prices have continued their upward march this week and now prevail on higher levels than at any time since the sharp advance of the market early last fall. Sales of No. 1 roofing rags to felt mills have been recorded at 1.35 cents per pound f.o.b. New York, and in the Middle West it is stated prices some $4 to $5 a ton above this level prevail. No. 2 packing is bringing 1.25 cents a pound New York. A strong factor in roofing rags is that packers apparently have little accumulation of stock on hand. Dealers say they are obliged to buy in single carlots to fill orders, and that packers want more money for each car they sell. Foreign roofing rags also are firm and are offered in sparse amounts. Dealers in Europe seem imbued with the high price fever and are hesitating to sell at the prices they are now offered.

The rest of the papermaking rag market exhibits firmness. New No. 1 white shirt cuttings are reported higher, dealers in a majority of cases asking 12.50 cents per pound or higher at shipping points, and other new cuttings are priced at relatively high levels. Old whites are strongly quoted, and thirds and blues are held at about 2.15 cents a pound for repacked stock and 1.65 cents for miscellaneous packing.

PAPER STOCK.—The market for old paper in New York is unquestionably in a booming condition. Prices have advanced during the past few days with the rapidity that has been truly surprising, and market levels are now higher than they have been in more than a year. Low grades are especially strong. Folded newspapers are quoted by New York dealers at 1.50 cents a pound and higher f.o.b. this city, and No. 1 mixed at 1.35 cents. Sales are reported in certain instances

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AND

Finnish Wood Pulp Union
Helsingfors, Finland

even above these prices, and dealers are said to be frequently turning down mill orders involving large tonnage, with the result consumers are finding it necessary to place numerous orders for limited-sized amounts of paper, thus giving demand probably a broader aspect than it really has. Old books and magazines are quoted at 2.65 to 2.75 cents per pound f.o.b. New York, No. 1 hard white shavings at 4.25 cents, No. 1 soft white shavings at 3.60 cents, print manilas at 1.85 cents, container manilas at 1.60 cents, and No. 1 overissue newspapers at 1.65 cents. Old No. 1 kraft paper has sold at 2.30 cents a pound New York.

OLD ROPE AND BAGGING.—Prices of old rope have firmed slightly. Where up to several days ago the quotation generally named to paper mills on domestic manila rope in No. 1 condition was 6 cents a pound at shipping points, dealers are now demanding 6.25 cents, and sales at this latter price have been recorded. Foreign rope is quoted at about a quarter of a cent per pound under domestic rope. Old bagging shows little activity insofar as No. 1 scrap is concerned. Roofing bagging is firm and moving fairly well at about 90 cents a hundred pounds, while No. 1 scrap bagging is available at very close to this same figure, around $1 a hundred pounds being commonly asked.

With the Woodsmen

THE BUD WORM IN THE LAKE STATES

The peril to the forest of the lake states of the spruce budwork has caused the sending out of a special review of the situation to foresters of the middle west by O. M. Porter, Secretary of the Woodlands Section of the American Paper and Pulp Association, the forestry department of the paper manufacturers of the United States. The bulletin is as follows:

The spruce budworn, which has killed vast areas of balsam and spruce forests in Quebec, New Brunswick and Maine, is rapidly spreading westward and is now active in the pulpwood forests of the Lake States.

There appears to be two distinct phases to the budworm depredations. First, the budworm invades the forest areas, stripping the foliage from the trees and lowering their vitality. Then, coincident with this, and for some years following, species of bark-beetles followed by sapwood borers, and a root rot, attack these weakened trees and kill them. The extent of the deadening depends upon the ability of the trees to recuperate from the budworm feeding. In younger forests, a return to normal vitality may be established shortly after the feeding stops, with a loss of the suppressed, weaker, or over-mature trees. In more mature forests, especially on poor soils, all the balsam may finally succumb during the deadening period, which may extend over five to ten years.

The combined effects of borers in the sapwood and heart-rotting fungi make the balsam trees very susceptible to wind throw. The final result is a tangled mass of fallen trunks and tops, with a scattering of birch still standing. Frequently the spruce is wind thrown also after having lost the support of the surrounding balsam.

Frequently these areas seed rapidly to balsam, which grows thriftily on account of the opened crown cover. This reproduction, however, is mixed with an ever increasing tangled mass of dead tops and branches, accumulating from the rotting trees. Fires under these conditions, kill everything, destroying the soil and leaving a barren waste. In budworn territory, there is only one possible line of action; that is, immediate salvage before decay and fire destroy the pulping value of the budworm killed trees.

It is possible, however, to improve the condition of the budworm infested territory with the view to controlling the infestation and subsequently developing productive forests. The following general recommendations express the consensus of the opinions of Entomologists and Foresters who have studied this problem:

1. **Exploration.** All limits should be explored and logging operation concentrated on these areas where the greatest amount of dead timber or red foliage trees are found (provided conditions are not already past the salvage stage). The percentage of red topped trees indicates the rate of drying.

2. **Yearly Examinations.** Yearly examinations should be made throughout the limits as long as red-topped trees are in evidence. A report on conditions a year or two after the budworm passed means nothing at present.

3. **Control Operations.** In greener areas, especially if not virgin forest, beetle control operations should be conducted to remove the place in the water all red foliage trees, or to utilize them before spring, so that the stands themselves can be held for future supplies.

4. **Logging on Budworm Areas.**

a—The cutting in budworm injured areas should be clean; i.e., it is not sufficient to cut only the trees that give most economical returns, but it is essential to remove the inferior trees that will later die, both large defective and smaller trees.

b—The tops should be utilized to as small a diameter as possible.

c—The operations should be continuous from year to year into the adjacent green timber.

THE FORESTS OF NEW BRUNSWICK

Speaking before members of the Federicton City Club on the forest resources of New Brunswick, G. H. Prince, chief forester of the Crown Land Department, said that while to the average Canadian passing through the province by railroad or the tourist by automobile, this province would appear as chiefly an agricultural province, due to the fact that the main lines of transportation followed through agricultural districts, New Brunswick is essentially a forest province.

This fact is particularly well known to lumbermen, guides and sportsmen, who penetrate the forest depths of the province, he said, while the presence of 415 up-to-date saw mills and five pulp mills is an indication of the immense resources required to maintain a perpetual supply of raw material. Over 70 percent of the total province area is composed of forest land, said Mr. Prince, with an average of 32 acres of forest land per capita, while over half of the forest area is Crown lands, the property of the people of New Brunswick.

Speaking of the increased interest shown in forest resources during recent years, Mr. Prince pointed out that over 7,500,000 acres, the greater portion of which is located in the northern and central counties on the Restigouche, Nepisguit, the Miramichi and Salmon Rivers, comprises the Crown lands of the province. This, he said, represented a vast resource, a money value totalling over $100,000,000, a capital investment which, under properly regulated management, may produce through growth and utilization an annual interest without reduction of the principal.

Efforts for further conservation are at present being confined to two main channels, said Mr Prince, an organized effort to secure accurate information regarding Crown lands through accurate mapping, and the creation of a permanent organization to carry out the present cutting regulations. The scaling of the annual log harvest in addition had paved the way for continued large orders.

FOREST CONDITIONS IN NEW ENGLAND

In a recent address before the Middletown Scientific Society at Middletown, Conn., Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, gave the university professors and scientists of his audience the results of a survey made for the paper industry of forestry conditions in the New England States.

All five of the states were studied with the co-operation of local foresters by the Woodlands Section of the American Paper and Pulp Association. After pointing out that less than one third of New England is being tilled, he said that there was only a small proportion of the available forest land being used for timber crops. A total of between 55,000 and 60,000 acres have been reforested in the five states, and only Maine and Vermont have more than 5 per cent of their forest land under forest management. Maine has 10 percent under proper management and Vermont has 25 percent of its woodlots and 10 percent of other forest land under care. The details by states are as follows:

CONNECTICUT.—There is a total of 1,898,980 acres in farm land, of which 36.9 percent is under cultivation, and 1,500,000 acres of forest and idle land. Only 111 percent of this forest acreage is under forest management. The average value of the forest land is $5 to $10 per acre, and the cost of reforestation is about $15 per acre. A total of about 10,000 acres has been artificially reforested. The result of the depletion of the forest has been the moving away of the wood using industries, such as the carriage manufacturers, which want to be nearer the timber supplies. Almost all of the construction timber is imported.

MAINE—There is a total of 5,425,968 acres of farm land, of which 36.5 is under cultivation, and 14,975,281 acres of forest and idle land. Only 10 percent of this normally forest land is under forest management. The average value of the state's forest land is $10 per acre, and the cost of reforestation is from $15 to $20 per acre. A total of something over 5,000 acres has been artificially reforested. The imports and exports of timber are about equal, wood being imported for construction and pulp and box board being exported. The effect of cutting away the forests will probably lead to the curtailment of many wood using industries, forcing the weaker out of business.

MASSACHUSETTS—There is a total of 1,400,000 acres in farm land, of which 64.3 per cent is under cultivation and 3,000,000 acres of forest and idle land. But 5 per cent of this land is under forest management. The average value of the state's forset land is $10 per acre and the cost of reforestation is from $15 to $20 per acre. A total of 25,000 acres has been artificially reforested, and 90 per cent of the construction lumber is imported. The wood using industries of Massachusetts consume 600,000,000 feet of lumber annually.

NEW HAMPSHIRE AND VERMONT.—There is a total of 1,020,570 acres of farm land in New Hampshire of which 27 percent is under cultivation, and 4,235,811 acres in Vermont of which 440 percent is cultivated. There are 4,684,676 acres of forest and idle land in New Hampshire, and 4,147,765 acres in Vermont of which there is under forest management 1 percent in New Hampshire and 10 percent in Vermont, except the woodlots of which 25 percent are under management. New Hampshire has 8,000 to 10,000 acres artificially reforested, and Vermont 8,000 acres, the cost being $15 and $12 per acre respectively, with forest land worth $20 to $12 respectively. The depletion of the forests in New Hampshire has caused the shutting down of large sawmills and wood using industries, and in Vermont the forest products industries have fallen off 50 percent in twenty years. In twenty years they could be increased to four times the present volume.

BOOKS FOR FORESTERS

Forest of British Columbia. — By H. M. Whitford, Ph. D., and Roland D. Craig, F. E., under the direction of Clyde Leavitt, Chief Forester, Commission of Conservation. Ottawa: Commission of Conservation, Canada.

This substantial volume is the result of three years' work on the part of the authors, and is based, as far as possible, on their personal knowledge of the local conditions in each of the districts described. The ground which they had to cover was vast. The province contains approximately 355,855, square miles. Much of it has not as yet been explored with any degree of thoroughness, and means of transport were often lacking, sometimes not even trails being in existence.

The authors state that about 200,000 square miles of the province are incapable of producing forests of commercial value. Some 145,000 square miles lie above the merchantable timber line, while on 55,000 square miles the soil is either too rocky or wet, or the forests have been so completely destroyed by fire that there is no hope for the natural re-establishment of forest conditions for centuries to come. It sounds almost incredible that over 100,000 square miles of timber have been totally ruined by fire, involving a loss which is computed at 665 billion feet board measure! "When one considers," write the authors, "that the total stand of raw material in the whole Dominion probably does not greatly exceed this amount now, the seriousness of this loss, which can be attributed very largely to public carelessness, becomes apparent."

The report estimates that of the species used in the manufacture of pulp and paper (hemlock, balsam, spruce, and cottonwood) there are 170 billion feet, which is equivalent to 243 million cords.

The primary object of the investigation was to secure an estimate of the available supply of timber in British Columbia, but the volume does a good deal more than that, for it contains valuable discussion of the geographic, physiographic, and climatic relations, and the present systems of administration and forest protection. The text is illustrated with maps and with a large number of admirable photographs, which give a striking impression of the wealth and beauty of British Columbian timber. — J. Royal Soc. Arts, Oct 24, 1919.

Technical Association Papers, Fifth Series

TECHNICAL ASSOCIATION PAPERS, FIFTH SERIES

This volume of 176 pages is one of the most valuable contributions to the literature of pulp and paper manufacture yet issued. The contents include the following articles besides a directory of the officers and members of the Technical Association and the list of committees:

The Power Plant of the Paper Industry, by A. G. Darling and H. W. Rogers. A 100 ton per day newsprint mill is analyzed as to its requirements of steam used in process and for the production of power. Consideration is also given to recent developments in the application of hydro electric power.

A System of Records to Maintain Uniformity of Basis Weights of Paper, by Parker K. Baird. A rational method by which the paper machine performances may be analyzed and recorded in regard to the uniformity in the weight of the paper.

Hydrating Machinery for the Paper Mill, by George L. Bidwell. The advantages obtained by the use of manganese steel for fly bars or beater rolls and for jordan fillings, based on the experience of a practical mill superintendent.

Modern Lighting for Paper and Pulp Mills, by J. H. Kurlandor. An illustratel treatise with tables covering in detail the principles of illumination and their application to the various departments of paper anl pulp mills.

Some factors Influencing Yield and Strength of Pulp Cooked by the Soda Process, by Martin L. Griffin. Deductions drawn by an expert in soda pulp from experience in textile finishing.

Sedimentation Control of Groundwood, by W. A. Munro. How freeness test results vary with change in the temperature of the stock.

The Efficient Production of Mechanical Pulp, by Adoloh F. Myer. Article descriptive of a practical speed governor for water wheels operating pulp grinders with illustrations showing the improvement in speed regulation by its use with the resultant economy of power.

The Drying of Paper, by M. B. Littlefield. The record of the study of different paper machines showing different rates of drying with interesting conclusions.

The Electric Steam Generator, by Horace Drever and Frank Hodson. An illustrated article covering the history, engineering principles, designs, economic fields, and comparative cost of operation of this new development in the application of electricity to steam generation.

Recovery and its Control, by George K. Spence. The outline of a steam of control with illustrative reports by an experienced operator of soda pulp mills.

Relative Efficiency of the Automatic Magazine Grinder as Compared with the Pocket Type Grinder, by John J. Case. A brief description of the construction of the two types of apparatus with a detailed analysis of the cost of operation of each.

Stamso — Cotton Linter Pulp, by Stewart E. Seaman. The production, characteristics and application of linter pulp.

Analysis of Reclaimed Cooking Acid for Sulphate Mills, by Gosta P. Genberg.

Analysis of the Raw Sulphite Acid, by Dr. Rudol Sieber. A discussion of the different methods of analysis with tables.

Concerning Lignin and Lignin Reactions.

Contribution to the Knowledge of the Constitution of Spruce Wood Lignin.

Contributions to a More Exact Knowledge of the Chemical Constitution of Spruce Wood. Three articles by Dr. Peter Klason, translated by W. E. B. Baker and Carl L. Fineman, by special permission of the author Valuable contributions to cellulose chemistry.

Use of the Continuous Centrifugal, by J. R. Kossler and G. N. Collins. A record of the experiments on washing soda pulp with the Elmore apparatus.

The Chemistry of the Sulphite Process, by R. N. Miller and W. H. Swanson. A record of the work being carried on in the Forest Products Laboratory, Madison, Wis., on sulphite.

Standard Methods of Testing Materials, by N. F. Becker. Covering Sulphate of Alumina, Lime or Causticizing, Crown Filler, and Soda Ash.

Color Effect of Rosin Size Emulsion on Finished Product, by C. H. Kent.

Sulphur in Sulphite Waste Liquor, by George Barsky. A contribution to research chemistry.

Producing Bleach Liquor with Liquid Chlorine, by S. W. Jacobs and H. P. Wells. An illustrated article describing a plant installation with records of its performance as compared with the use of bleaching powder.

Fuel Economizers in Paper Mill Operations, by George E. Williamson and G. C. Derry. A detailed analysis of the principles of operation and care of the apparatus.

A New Idea in Chip Breaking, by A. D. Wood. Description of apparatus developed by a practical mill superintendent.

Bibliography of Paper Making for 1921, by Clarence J. West. A classified index of the literature published during 1921.

Proceedings of the Annual Meeting, April, 1922.

Sectional Meeting on Dyestuffs. Discussion on the use of Auramine, Copper Sulphate, and Stilbene Yellow; two sidedness of paper and foam and its prevention.

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Discussion of Various Papers Presented at the Convention.

The volume described is obtainable, on order from the Technical Association of the Pulp and Paper Industry, 18 East, 41st St., New York City, or from The Pulp and Paper Magazine, Gardenvale, Que.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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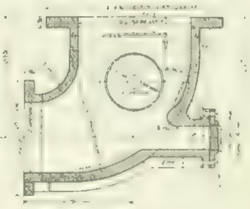

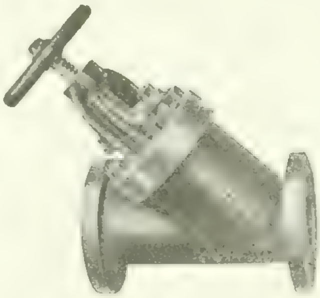

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-:- EDITORIAL -:-

WHY McGRAW WENT TO COLLEGE

Probably 75% of the men in the Pulp & Paper Industry are fans. In the winter time they are Hockey fans and in the summer time they are either Golf or Baseball fans, or both. There is hardly a mill in the Dominion but what has a goodly representation on a Baseball team, and many of the mills are represented by a really excellent playing organization; so the name of John McGraw is not at all strange to readers of the Pulp & Paper Magazine.

John McGraw has been writing reminiscences of his thirty years in baseball for the daily papers, and his story is one of the most interesting that we have read in some time. It is not merely a story of sport, nor a tale of how the giants won the World's Series twice in succession — it is a very interesting study in the personality of the baseball player, and an insight into the personality and character of one of the most successful of baseball generals.

Early in his story, which began with the last World's Series and then jumped back to the beginning and worked forward again, Mr. McGraw mentioned his appreciation of the qualities of the College trained man. He gives as his principal reason for favoring the educated player the fact that the man who has a trained mind takes the trouble to study out his mistakes and to benefit by correction; he is not likely to get sore when told he is wrong, but will grasp the opportunity of finding out where and why he is wrong, and what he must do to correct his fault. On reading that statement, we wondered whether Mr. McGraw himself had had the privilege of a college training, and it was not until a number of chapters after that, that the question was answered. As the author puts it, he was playing with the Baltimore Orioles and was making fairly satisfactory progress. He conceived the notion that he wanted to go to college and put the proposition up to his chum and roommate whom he convinced of the advisability of the move. So to college they went, paying for their tuition by coaching the college team. There are probably not many ball players who have both the ambition and the determination which would carry them through a college course under those circumstances, but there are many college trained men who have gone on the diamond and made exceptionally good. Among these are two men of national reputation, both of whom the editor is proud to refer to as former students. One is Lawry of the Orioles and the other is Art Nehf, the star pitcher for the winning giants of 1922. Both of these men were keen and conscientious students, they didn't make many mistakes and practically never made the same mistake twice. They, as well as Mr. McGraw, made use of an opportunity, which is often overlooked by those who are obtaining an education. We refer to the habit of improving one's work by having errors pointed out and corrected. It is one of the most important duties of the teacher to point out errors and, if done in a kindly way, will be a factor in character building that will be of the greatest benefit to the student. There are not too many boys who realize this function of the teacher, as they are often too inclined to consider the instructor as a fault-finding disciplinarian, but the privilege of having one's faults discovered and corrected is certainly one of the greatest blessings of going to school.

Not every one is in the happy position of having his regular work come at a time that gives him a fair amount of leisure for a large part of the year, and thus furnishes an opportunity for attending a school or college. Most people who are at work are obliged to stick to the job. The ambitious young man, however, need not be discouraged nor handicaped seriously by reason of this condition; a great many of the paper mills are within reach of a community where night classes are in operation or where they can be organized. Even if such facilities do not exist, it is now possible for any person in the Pulp & Paper Industry, who can read and write, to become educated in his own business by means of correspondence courses, which, by the way, are far less expensive than college training and can be studied without leaving home. In fact, the man who carries on a corespondence course in Paper Making has the whole mill for his laboratory, either for personal work or for careful observation. When a student enrolls for a course, he pays for having his mistakes corrected; he gets into the habit of expecting that his mistakes will be noticed and brought to his attention, and as he no doubt will appreciate the service that his instructors are thus rendering him, he will rapidly become more inclined to appreciate corrections and suggestions for improving his work that are sure to come from time to time from his superiors in the mill. Instead of letting criticisms pass over his head, with the thought that it is just so much fault finding, he will endeavor to study the reason for comment and try to think out some way of improving his work. The growth of this attitude has a fortunate reflex action also on the superintendent or foreman, because once he sees that his suggestions and corrections are appreciated and made use of, he is the more inclined to impart bits of wisdom to the fellow who knows how to appreciate them.

The moral of this little tale is to take a leaf from John McGraw's note book and make an opportunity to get a better education.

COBWEBS

The students in the Pulp and Paper Manufacturing course at the New York State College of Forestry at Syracuse University sent out unique New Year Greetings in the form of a set of blotters, in red, white and blue, which were made by themselves in their paper laboratory.

A remarkable piece of work has been produced by the United Wire Works Limited in the form of a nicely illustrated story of the Manufacture of Paper Machine Wires. This piece of literature is in itself a work of art, aside altogether from the significance and value of the story conveyed. The book is about 9″ x 12″ in size and printed on handmade deckle-edged paper. It is built around a series of six illustrations reproduced from dry-points by John R. Barclay of Edinborough. There is a brief history of the United Wire Works, Limited, and a short description of each of the illustrations. These are interspersed in a running story on the manufacture of Paper Machine Wires which is an exceedingly interesting and carefully prepared treatise on the subject. The pictures used in the book were reproduced last year in a series of advertisements of a most striking character in the Pulp & Paper Magazine.

The Ontario Pulp & Paper Maker's Safety Association are leaving no stone unturned in their effort to make the mills of the Industry in Ontario as safe as is humanly possible. The second annual contest for the Safety Shield is now in progress and from the interest that has already been shown there is no doubt but what the competition this year will be even keener than in the past. There are two divisions in the contest, the first includes mills employing less than two hundred people, and the second is for mills employing more than two hundred. Avoidable loss of time, whether from sickness or accident is one of the most serious handicaps to efficient production. Most employers realize this and are doing their best to encourage carefulness in every respect. With the good example already set by the Ontario Mills in organizing their Safety Association, it is to be hoped that before another year rolls around there will be a movement on foot for a department of safety in the Canadian Pulp and Paper Association. There is certainly need and opportunity for a Dominion wide effort in this direction.

Another proposition has sprung up for erecting a pulp mill in the country north of Edmonton. The despatch giving notice of the plans of Foley, Welsh and Stewart prophesies a 50 ton pulp mill if rates can be equalized to compete with coastal mills. We are not aware of any coastal mill competing in the production of ground wood; practically none is made for sale, probably because there is no available market. The only paper mill west of Sudbury without a ground wood mill is the new tissue mill at New Westminster, B. C., and that would hardly take 5 tons a day of mechanical pulp.

No statement is made of the amount of wood available, nor how much is jack-pine. This wood does not seem to be very popular with grindermen. A mill that would provide a market for settlers' wood should be a boon to the country, but why not saw it into lumber, lath and shingles to build houses for the growing population of that country? If the wood is to be made into pulp, we would suggest a combination ground wood and sulphate pulp and sheathing and wrapping paper and board mill.

POWER NEEDED FOR PAPER INDUSTRY

"A rapidly growing demand for large blocks of power for use in connection with the pulp and paper industry," is given as the reason why the Grand Falls on the St. John River, "may be taken over by the Government," and developed by the New Brunswick Electric Power Commission, "in the near future," in a letter which C. O. Foss, Chief Engineer of the Commission, has written to Alderman Joseph A. Cain, president of the Fredericton Board of Trade, who made an enquiry for data in possession of the commission in regard to water power development in the western part of the province, especially concerning Grand Falls and Pokiok, Shogomoc Powers.

"Following the development of this power (Grand Falls) a network of transmission lines will undoubtedly be constructed covering the whole province," also writes Mr. Foss in his letter to the Board of Trade.

Business and life are like bank accounts--you can't take out more than you put in.

How Far Can The Pulp-Mill Go In Utilizing Decayed Insect-Killed or Other Inferior Wood in the Manufacture of Pulp

By JOHN S. BATES, Bathurst Company Limited.
Bathurst, N. B.

(Paper presented at the annual meeting of the Woodlands Section, Canadian Pulp and Paper Association, Montreal, Jan'y. 25th. 1923.)

In opening the discussion on this subject to-day, the writer will review the information at hand and trace the trend of physical and chemical changes in the wood and pulp. The references listed at the end of this paper contain detailed information, although it must be said that the published information does not answer all the questions that might be raised. We are indebted to the Forest Products Laboratory, Madison, Wisconsin, for a great deal of painstaking work on this problem. A number of mills have also made tests, although only a few have published results. Foresters have studied the question on their side and the purpose of the meeting to-day is to draw conclusions from the experience of all. The writer's own investigations lead him to be rather optimistic about using more decayed wood for paper-making. The details of the subject are apt to appear pessimistic, it should be repeated that we are trying to find ways and means of using larger quantities of inferior wood at a profit, and this aim should be kept in mind during the discussion rather than disposing of the whole question with a negative answer. The pulp and paper industry is to a large extent a scavenger in any case, using grades and species of wood not suitable for lumber. It is therefore logical to press the use of inferior wood still further within the limits of economic utilization. Several pulping processes and numerous grades of products are available, and each mill has a certain amount of freedom in choosing the most satisfactory method.

The ravages of the spruce budworm have made the problem an urgent one in Eastern Canada. Otto Schierbeck (1) in his recent treatise has made the situation a great deal clearer to many of us. Balsam fir trees representing at least 150,000,000 cords of pulpwood have already been killed by the budworm. The wood itself, however, is not directly injured but after the tree is killed nature's method is to continue the destruction through the agency of insects, fungi, molds and other destroyers. Will these trees be left in the forest to crumble, or will a special effort be made during the next few years to salvage this immense amount of raw material?

The point of view of the owner with decaying balsam in the woods and with infected wood on the block pile is to find means of maximum utilization, and in such a way as to produce a marketable product which will be of sufficiently good quality to bring a fair price and maintain the mill's reputation. On the one hand the logging contractor hesitates to cut trees of doubtful value or haul to the river-bank those logs which after felling show presence of decay, because the scalers may cull extensively—and then these logs at practically no cost to the company go down to the mills for utilization. On the other hand the owner desires to know in what way and to what extent the culling may be eased to the point where all possible inferior wood can be salvaged at an over-all profit. This means higher pay to the contractor for cutting more trees, greater loss by sinkage and lower value at the mill, but wood is used which would otherwise be lost, helping the forest to start a new crop and preserving for future use the sound standing timber in other areas.

The viewpoint of the wood buyer is more restrictive because he can reject or discount decayed wood (as is proper) and then use it with fairly good results. Most of the publicity on this subject has been in the United States and it is natural that stress has been laid on inferior character of decayed wood. At the same time there are undoubtedly many mills in both Canada and the United States using considerable proportions of inferior wood because it pays to do so.

Changes may take place in the wood between forest and mill, and it may be well to recall the more important points in connection with the handling of wood and pulp. After a tree is killed by budworm, fire or other cause there is no chance of improvement in the quality of the wood, so that the tree should be cut as soon as possible before insects and fungi proceed too far with destruction. Logs with the bark on, left in the woods under the usual moist conditions, are subject to rapid decay. When logs are piled properly on the river-banks there is less deterioration and practically none during the six months of our northern winter. In river-driving decayed logs show a greater sinkage loss and on long drives there is more or less deterioration by rotting due to the favorable moist conditions. If logs could be kept under water they would be well preserved, but this is not possible. On arrival at the mill the logs are slashed into pulpwood blocks, the bark should be completely removed and the wood stored on block pile or in ricks under proper conditions of drainage an general sanitation. (2) (3) In this country the interior of a block pile remains so cold even during the summer months that there is comparatively little decay going on in most cases. It would be interesting at this time to hear the experience of companies that have sprayed their block piles primarily for fire protection and to learn whether the warming up of the wood by the summer water has stimulated decay. When the pulpwood enters the mill there is the question of sorting the wood to different processes and this can often be done to advantage. The groundwood pulp is subject to continued decay when it has to be stored in the form of moist laps. (4,) (5,) (6) This may be controlled a good deal by observing certain precautions and under severe conditions may be prevented by fairly simple preservative treatments. (7,) (8) Chemical pulp may also deteriorate in storage by molding or rotting but the danger is comparatively slight. (9)

In discussing the use of decayed pulpwood one always wants to know just how rotten the wood is. The difficulty is that there may be all degrees of decay even within a single log. Furthermore, the extent of decay is hard to inspect or measure, particularly by chemical tests because it is very tedious to prepare a small sample which will fairly represent a large quantity of wood and the tests themselves are hard to carry out. The action of insects and fungi on the bark is perhaps as much an advantage as otherwise because the bark is more easily removed during river-driving and mill barking. Wood itself is affected to some extent by wood-borers and other insects, molds and bacteria, but serious decay is mainly by wood-destroying fungi. These filamentous fungi bring about a deep-seated and continued deterioration of wood, in some cases showing as heart rot and in other cases as sap rot. By following the changes in the physical and chemical properties of the wood we shall be able to understand more clearly the effects of decay in relation to the manufacture of pulp and paper by the various processes. (10,) (11)

Among the physical properties of interest are weight, color, hardness and absorbent power. Decay is accompanied by a loss of wood substance and therefore lower density without much decrease in volume. This lowering of specific gravity is in fact an index of the degree and of course accounts for lower yields of pulp on the cord basis, independent of any yield losses on the weight basis. Wood may be appreciably decayed without a noticeable drop in weight of wood and in general the loss in weight is less than the extent of decay, so that 10 per cent decrease in specific gravity would represent an advanced stage of decay. In some cases such as the ordinary heart rot of balsam fir, the wood turns decidedly reddish brown in the early stages and the appearance of the wood is worse than the actual loss of physical and chemical properties. In other cases such as sap rot the decay may continue to a serious stage before there is a noticeable change in color although close inspection of the wood might show the change in fibre structure. Discoloration of pulpwood is a convenient inspection method but must be used with caution. This discoloration persists in the groundwood pulp and has a slight effect also on chemical pulps. When wood decays, softness ad brittleness develop and in the end the wood becomes entirely punky. This is serious on account of the wood fibre being more easily broken in paper-making. The hardness or firmness of pulpwood is one of the most convenient and accurate tests and the possibility of a standard method on this basis has been suggested. Decaying wood becomes more sponge-like and as a rule will absorb more water. This has been noticed especially in pulpwood from the river and from the block pile. For instance, balsam fir chips of brown color are often 5 to 10 per cent higher in moisture than sound chips. This probably has more bearing on the chemical processes of cooking than is usually considered and creates a difference in cooking conditions which tends to protect the decayed portions. Ordinary chipper sawdust also shows this property of higher moisture content.

Chemical analysis of wood is not yet developed to a stage where we are able to determine the exact chemical composition but the tests show a great deal about the chemical nature of the wood. Taking sound spruce as a typical example, the composition on the moisture-free basis is approximately 60 per cent cellulose, nearly 30 per cent lignin and the balance lower carbohydrates, resins, mineral ash, etc. The water-soluble constituents are usually from 2 to 4 per cent and indicate only a small portion of disintegrated material. The alkali-soluble portions as determined by boiling in 1 per cent sodium hydroxide amount to 8 or 10 per cent. Stronger alkali even at ordinary temperatures has a more pronounced effect and is used to show the stability of the cellulose. Alpha cellulose resistant to 17.5 per cent sodium hydroxide amounted to about 65 per cent of the total cellulose, the less resistant beta cellulose is about 10 per cent and the lowest form or gamma cellulose about 25 per cent. Decay causes a loss of wood substance partly by the giving off of carbon dioxide and other gases and partly by the formation of water and water-soluble substances which may be washed away from the wood or pulp. This loss in weight has a bearing on the percentages of the remaining constituents and the final reresults should be considered as closely as possible in terms of the original weight of wood before rotting. The action of most wood-decaying fungi seems to be a selective one, the cellulose being attacked while the lignin is left practically untouched. A serious result from the paper-making standpoint is therefore the partial loss of valuable cellulose fibre. The loss in weight is comparatively moderate but there is also a loss in quality because decayed wood always shows a considerably lower proportion of alpha cellulose while the beta cellulose increases and the gamma cellulose is decomposed rather faster than it is formed. Both alpha and beta cellulose, however, make pulp and the proportion of these in the total cellulose is often as high as in sound wood, so that from the yield point of view the original loss of cellulose is the important factor. As the lignin is not greatly affected, the percentage remains the same or even rises several per cent due to the loss of other substances. The water-soluble and alkali-soluble constituents increase rapidly in decaying wood and these tests are covenient for showing fairly closely the extent of decay. Other tests such as pentosan, copper number, etc., are important, while mineral ash and ether-soluble resins do not show much change.

In considering the manufacture of pulp the two important items are yield and quality. A careful distinction should be made between yield by volume and yield by weight. The amount of actual wood in a cord depends mainly on the density of the wood, balsam fir being about 20 per cent lighter than spruce and decayed wood lighter than sound wood depending on the degree of rot. The yield of pulp on the cord basis should therefore be discounted at the start in all cases where the wood shows a density lower than normal, whether this be due to species or decay. The losses in yield on the oven-dry weight basis are in addition to the above, although not serious in many cases. The physical qualities of pulp are usually the more important because the product is ordinarily used directly as a fibrous material. The chemical properties have a bearing on bleaching and other chemical treatments. The quality of pulp from decayed wood should be judged in relation to the uses of the pulp and paper. While decay results in various disadvantages in the pulp processes, the degree of rot should always be kept in mind and also the proportion of rot in the total mass of wood treated.

Groundwood pulp (12) is made by the simple mechanical grinding of wood and therefore shows the least alternation. We are concerned mainly with the physical quality of the product and decay has a direct effect on the pulp. The low density of the wood gives a somewhat lower yield per cord but it should be pointed out that this is merely a nominal disadvantage to a mill cutting its own wood. Discoloration of the wood is carried directly into the pulp, resulting in poorer general color together with dark shives and dirt specks. Softness and brittleness of the wood fibre make for ease of grinding with lower power consumption or more rapid production. On the other hand the fibres are broken up less uniformly, giving a shorter average fibre length and more fine fibre. Apparently groundwood pulp from decayed wood is the same or rather higher in freeness compared with normal groundwood but the presence of fine fibres causes a slowing effect when mixed with ordinary groundwood. The absorbent nature of decayed wood has no particular bearing. The moderately higher water-soluble content causes a slight further loss during grinding and paper-making, the other chemical factors having little direct effect. The yield of groundwood pulp from sound wood is usually 90 to 95 per cent, the losses being coarse shives and some fine fibre. Decayed wood gives a fairly high yield on the weight basis unless the whole mass of wood is considerably deteriorated. The extra losses are due to water-soluble substances and more fine fibre carried away in the white water, but their removal tends to equalize the quality with regular groundwood to some extent. However, the groundwood pulp still retains most of the qualities of decay which cause physical and mechanical difficulties in the manufacture of paper. The pulp foams considerably, the wet sheet is apt to stick at the couch roll and presses, the broke losses are higher and running qualities are poor in general. The finished paper is darker in color and shows more dirt specks, although the strength is fairly high except in folding. Another disadvantage is accelerated rotting of the groundwood pulp in storage.

In the manufacture of chemical pulp the brittleness of the wood causes a somewhat higher loss of sawdust and small slivers in the woodroom in connection with chipping. Cooking with chemicals dissolves away most of the decay and sterilizes the finished fibre. The purpose of each chemical process is the separation of cellulose fibres in a fairly pure state and any effect of decay on the physical form or chemical nature of the original wood fibres has a bearing on the final result.

The sulphite process (13,) (14) is an acid treatment and may be considered the mildest cooking processes with the least decomposition. To some extent decay is equivalent to preliminary digestion. The lower density of the wood gives a lower yield per cord with some disadvantage due to the lower capacity of a digester. At the same time the difference with decayed wood is usually not as great as between spruce and balsam fir. The discoloration of the wood is largely removed, although a yellowish tint may be present in the unbleached pulp together with more dark shives and dirt specks. The softness of the wood is reflected in the shorter average fibre length of pulp and more breaking up of the fibres in the beater. The greater absorbent power of decayed chips makes a difference in cooking conditions due to the higher moisture and in some cases the effect seems to be a prevention of over-cooking of the decayed portions with a higher percentage of screenings. If all the cellulose in sound wood could be saved in cooking the yield of pulp would be 60 per cent, but usually 25 per cent of the cellulose (mostly gamma cellulose) is dissolved and reduces the yield to about 45 per cent by weight of the wood. As decayed wood is nothing in gamma cellulose, the sulphite process gives a comparatively high yield on the weight basis. The main difference is that the finished pulp has a lower alpha cellulose content than pulp from sound wood, but in general the results by the sulphite process are very much better than might be expected. There is nothing to show that the consumption of chemicals is appreciably higher than usual. In all results that have been reported the yields of screened pulp on the weight of the weight basis were equal to or only slightly lower than usual practice. The chemical treatment has largely cleansed the fibre of decay and the pulp is safe for storage. The consideration of quality depends on the grade of paper made. The pulp has good running qualities on the paper machine, but the finished paper is slightly inferior in color and cleanliness. The strength is only moderately reduced. For the manufacture of higher grades of products the conditions are not so favorable. Bleaching requires a somewhat higher bleach consumption and the result is apt to be below normal. The lower alpha cellulose content would tend to make far less permanency in the paper. For special uses such as the production of viscose where the chemical properties of the pulp are uppermost, decay is a decided disadvantage.

The soda process (15) applies mainly to hardwoods such as poplar, basswood and birch rather than to the softwoods, spruce, balsam fir, hemlock and jack pine, used in the other chemical processes. The pulpwood conditions are therefore considerably different. The strong caustic soda causes a deep-seated decomposition by hydrolysis and the soda process may be looked upon as the most severe cooking treatment. As far as the low density, dark color and softness of the wood are concerned the effect of decay is much the same as in the sulphite process. The higher moisture and greater absorbent power probably have less effect than in sulphite. In cooking sound wood the yield is somewhat lower than by the other processes because over 30 per cent of the cellulose is dissolved. In decayed wood the proportion of resistant cellulose is lower and the very strong alkali dissolves a still larger percentage of the wood. It is noticeable that the soda process makes the product in all cases much lower in alpha cellulose than in the case of sulphite. Decay requires a higher consumption of soda to remove the lignin and other substances. This makes the cooking conditions rather different and somewhat raises the cost of operation. The yield of unbleached soda pulp on the weight basis is appreciably lower than in the case of sound wood and this effect may be very pronounced when rotting is well advanced. The quality of the unbleached pulp is fair but soda pulp is seldom used in this state. Bleaching is usually required and this causes further losses by higher bleach consumption, more substance dissolved by the bleach liquor and poorer color of bleached pulp. The strength and beating qualities are below normal although this is not so important because soda pulp is ordinarily used as a filler in book papers.

The kraft or sulphate process concerns softwoods again, with special reference to strength of pulp but with a disregard of color. The mixture of caustic soda and sodium sulphide gives a milder cooking treatment and slight under-cooking is usually practiced to preserve the maximum fibre strength. The kraft process is a very general and useful method for utilization of inferior woods of various kinds although it is sometimes imposed upon in this respect. Very little information is at hand on the exact effect of decay in relation to this process but in general it may be assumed that the action is between that of sulphite ad soda. Low-density woods have the same drawbacks as in the other processes. Discoloration is not important because the kraft pulp is dark brown and dirt specks do not show up as much. Softness and brittleness have a bearing in the direction of shorter fibres and lowered strength. Higher consumption of chemicals is required but this is not very serious in a mill with an efficient recovery system. The yield of pulp on the weight basis is fairly high although not as favorable as in sulphite. With a moderate amount of decay the quality of pulp may be considered good, the only apparent disadvantage being a moderate reduction in strength. Bleaching is not practised except with well-cooked, easy-bleaching sulphate in which case there would be a further loss.

From a limited knowledge of the subject the writer's impressions may be summarized as follows:—

In the groundwood processes decayed wood gives a medium to high yield but the quality of the product is poor. This method of utilization should be discouraged except for low grades and where necessary for ordinary grades such as newsprint in small proportions up to perhaps 5 or 10 per cent. Long storage of infected groundwood should be avoided.

The sulphite process gives a comparatively high yield and the quality also is fairly good. This process is suitable for producing low and medium grades including newsprint sulphite and the proportion of decayed wood that might be handled to advantage is probably much higher than may be imagined in many mills. For higher grades including bleached pulp there are more limitations.

The soda process gives a rather low yield and only fair quality. The disposal of decayed hardwoods is therefore more restricted than is the case with softwoods by the other processes.

The kraft process gives a medium yield and the quality of pulp is fairly good. This method of utilization has a wider application than any of the others and the results with decayed wood may be considered favorable when the proportion is not too high.

The sorting of decayed wood in order to cook it separately in any of the processes would probably allow slightly higher yields and better results although this procedure might not always be feasible. In many cases good results are being obtained by feeding the decayed wood in moderate proportions into the pulp-mill uniformly with the sound wood. The same considerations hold true of the finished pulp; the inferior pulp might be used in making low and medium grades of paper and board products but it is often more feasible to distribute the effect throughout the regular mill run.

It is realized that the degree of decay in wood is hard to estimate. However, it seems safe to say that infected wood which is still fairly firm and which retains its fibrous appearance will be suitable for making pulp and paper within the limits that have been mentioned. Any wood that is very soft, punky or lacking in fibrous structure is undoubtedly too far gone to bother with in the pulp-mill and should be left in the woods or used for fuel in the boiler plant.

The handling of inferior wood from forest to mill, the methods of conversion into pulp and paper and the calculation of limiting costs are important factors and require careful investigation. This whole problem is a pressing one and provides a great opportunity for co-operation between woodsmen and pulp-mill operators.

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NEW ASSOCIATION OF U. S. PULP MILLS

On January 1, 1923, an organization known as the U. S. Pulp Producers Associations began operation. This Association is a development from, and takes the place of, the old Pulp Manufacturers Association. It was organized to meet the needs of the changing conditions in the paper industry, where many of the larger paper mills are now operating pulp mills as a part of their own plants.

This new Association proposes to continue the statistical work of the Pulp Manufacturers Association, and to expand its reports to cover not only domestic, but also foreign, production, shipments, exports, etc. An interesting phase of its work will be periodic reports on the pulpwood situation of the United States, prepared in cooperation with the Woodlands Section of the American Paper and Pulp Association.

This announcement of the organization of the new Association of Pulp Producers comes only after most careful consideration by the pulp manufacturers of the United States. The present membership of the new Association will result in weekly and monthly reports based on a very large percentage of the total pulp, production of the United States. A feature of its work in connection with these reports will be the preparation of charts showing graphically the production, orders, shipments and imports of the several grades of pulp.

The purpose of the United Pulp Producers' Association, as outlined by its Secretary, O. M. Porter, who is also Assistant Secretary of the American Paper and Pulp Association and Secretary of its Woodlands Section, are as follows:

a—To distribute to members regularly and promptly all the available statistical data regarding the production and importation of the various grades of wood pulp, and, so far as is possible, pulpwood.

b—To provide a means for concerted action by pulp manufactures in matters of tariff, taxation, legislation, etc.

c—To further the uniformity of cost finding methods in the pulp industry.

d—To increase the effectiveness and economy of pulp production.

The officers of the new organization are:

President—T. W. Ross, Hummel-Ross Fibre Corporation.

Vice-Presidents—L. M. Alexander, Nekoosa-Edwards Paper Co.; D. C. Everest, Marathon Paper Mills Co.; E. W. Kiefer, Port Huron Sulphite and Paper Co.; W. H. Savery, Harpers Ferry Paper Co.;

Executive Committee—Herman Elsas, Continental Paper and Bag Mills; George W. Sisson, Jr., Racquette River Paper Co.; W. H. Sullivan, Bogalusa Paper Co., Inc.

Secretary-Treasurer: O. M. Porter.

The development of this Association of Pulp Producers comes as the direct result of the American Paper and Pulp Association's policy, as expressed by its Executive Secretary, D. Hugh P. Baker, of furthering organization among the several branches of the paper industry, in order that the industry as a whole might be in a position to act uniformly and co-operatively in matters of local and national importance to the industry and its several branches.

Standing Timber Insurance

European Forest Insurance.

The first recorded forest fire insurance in the world is said to have been written by various companies in Germany prior to 1870. The most successful forest insurance, however, is not located there, but in Norway and Finland. The Norwegian Mutual Forest Fire Insurance Company was established in 1912. Its success has been phenominal. The company has already Insured 60 per cent of the insurable area 7,000,000 acres).

No timber is insured, which according to forestry principles, is ready to cut, i. e., no insurance is written on over mature or merchantable timber not growing sufficiently to return the usual income (4-5 per cent) on the value that the timber represents. Insurance must be carried for five years, and all the forest property of the owner must be insured. Rates are extremely low, the premiums ranging from 5c to 15c per $100 worth of insurance. The company has accumulated a large surplus, part of which is loaned to policyholders with the insured forest as collateral.

Finland's annual fire loss is said to be about 1/100 of 1 per cent., believed to be slightly higher than Norway's. Unlike the Norwegian company, the Sampo Mutual Insurance Company, operating in Finland, will insure all classes of trees and forest products, but is liable for only three-quarters of the damage. Insurance premiums range from 10c to 20c per $100 worth of insurance. This company wrote over $20,000,000 worth of forest insurance in 1920.

These are the two outstanding successful forest fire insurance companies in the world. They are both conducted under the mutual principle in countries in which the co-operative instinct has reached its highest development. This, together, with a low burning rate and high values are doubtless the reasons for their success.

France, Germany, Holland and Sweden all have standing timber insurance. Most of these ventures have thus far met with indifferent success. In Germany, the Gladbacher Fire Insurance Company (one of the three companies carrying this line), writes insurance on forest property at a premium charge ranging from 4c per $100 worth of insurance to 32c per $100 worth of insurance. If the timber is felled while the insurance is in force, the insurance automatically shifts to the felled timber as long at it remains upon the forest property where felled.

In France premiums vary from 4c per $100 to $1 per $100. An excellent system of insurance has been worked out on paper, but in practice, the insurance offered is said to be vary unsatisfactory. The Swedish Veritas, after a very thorough study of the problem in Sweden, offered to insure forestry property in 1919. Premiums vary from 8c per $100 to 40c per $100.

The higher rates and indifferent success of the companies operating in the last three countries, namely, France, Germany, and Sweden, seems to be due to a higher burning rate, greater moral hazard, and partly, no doubt, because most of the insurance is written by stock companies operating for a profit. Nevertheless, it will be seen that European premiums varying from 4c to $1 per $100 worth of insurance, are very much lower than have ever been offered in the United States.

Standing Timber Insurance in the United States.

Standing timber insurance in the United States is a very recent development. Occasional policies were written prior to 1917. Many of these were handled by Cornwall and Stevens, insurance brokers, of 84 William Street, New York City (see attachment form appendix), and were placed in old line companies, generally with the Globe and Rutgers Fire Insurance of New York. These usually covered odd areas of valuable timber insured for short periods at rates from 1½ per cent. to 2½ per cent. per annum.

The Phoenix Assurance Company of London was the first company which actively solicited standing timber insurance in the United States (1916). They confined their efforts to the section of the states of Oregon and Washington, on the slope of the Cascade Mountains. They insured Douglas fir, spruce, cedar, and pine of sixteen inches in diameter and upwards. Timber exposed to old burns or slashings was not insurable. The area had to be accessible for logging and of sufficient quantity to be logged profitably. A 100 per cent. co-insurance clause was used. Liability was based on appraised damage to stumpage.

Premiums were $1.25 for the dry season and $1.50 per $100 for the entire year. An approved patrol of area would secure a maximum reduction of 33 1/3 per cent. in the premium rate. This venture did not prove profitable and so it was discontinued in 1918. The anticipated demand did not materialize and the insurance that was written was bunched.

The Timber Land Mutual Fire Insurance Company was the next venture into forest insurance. This company was incorporated in New Hampshire by a special act of the Legislature on February 21, 1917. (Act of incorporation and by-laws appendix.) This was the first organization in the United States dealing exclusively in standing timber insurance. The company insured merchantable standing timber, young standing timber, and plantations. Risks were very carefully selected; land close to railroads, recent slash, portable mills, picnic grounds, large cities, and other unfavorable environments "were avoided." Tracts carrying insurance had to be adequately protected from fire either by Forest Protective Associations, by the state, or by the private owner.

Merchantable timber was insured on the basis of its stumpage value per thousand feet, board measure, or per cord. Young growth and plantations were insured only on the basis of an agreed value per acre. A 90 per cent. co-insurance clause was attached to all policies. Compensation paid, was that proportionate part of the damage sustained, which the insurance carried bore to the total value of the tract insured.

Despite the fact that the company could only write $5,000 upon any one risk and that its premium rate was 2 per cent. per annum, it had by the end of 1917, written insurance in New Hampshire, Vermont and Massachusetts to the value of $327,192 among 67 policyholders; 87.4 per cent. of the insurance being on merchantable timber, 8.4 per cent. on young growth, and 4.2 per cent. on plantations. At the close of the first year, premiums were reduced to 1¾ per cent. with a contemplated further reduction or ¼ per cent. Mr. S. L. de Carteret, treasurer and manager of the company, writing on November 21, 1917, believed that with three or four million dollars' worth of insurance the net charges to the policyholders could be reduced to 1 per cent. The company also made arrangements with the Globe and Rutgers Fire Insurance Company to cover risks on excess of its own line of $5,000 at approximately the same rate, but on this insurance there was no return of unused premiums at the close of the year.

To the surprise of many interested in the problem of standing timber insurance, the company early in 1918 declined any more business and reinsured its existing risks in the Globe and Rutgers Company at 1 per cent. and then quietly went out of existence. The guaranty capital was returned to the directors and with 5 per cent. annual interest.

Quoting its president, W. R. Brown, " .... the company, having established the principle of timber insurance and not being particularly interested in the commercial aspect of the matter, decided to turn over its policies to the Globe and Rutgers Company, who were willing to assume the same rates and agreements and offered a larger line to the policyholders . . . . ."

However, the Globe and Rutgers Company were not particularly interested, nor did they offer the same rates for the Adirondacks: "1½ per cent. plus 10 per cent* on merchantable timber and three per cent. plus 10 per cent* on all other with full co-insurance clause."

Equitable Rates for Forest Insurance.

In the early days of fire insurance on buildings, rates were very crude and unsatisfactory. Forest insurance rates in most countries are still so. Rates today are based on the theory that each risk can be analyzed and the hazard measured. The costs of the known hazards are then added or subtracted from the basic unanalyzable part of the risk. This is known as schedule rating. The measurement of the hazard is based on the judgment of the underwriter, and not on actual figures obtained from past experiences with similar risks.

Forest insurance rates can be similarly built up, although with the present meager knowledge of forest fire hazards, such schedule rating will necessarily be very crude. Forests frequented by campers, hunters, and fishermen are distinctly subject to additional charges to the basic rate, whereas forests having a well organized system of patrol, as that of the New Hampshire Timberland Owners' Association, would call for a subtraction from this basic rate.

The following is a suggested outline of rates for the Adirondacks, based upon a general knowledge of the burning rate and of the better known forms of hazard. The basic rate has been set at about one hundred times the known burning rate for this region:

	Plus	Minus
Basic rate .... $0.50 per $100		
Cultural features on or within ¼ of a mile of the property:		
Railroad (steam)	$0.30	
Patrol system		
Railroad (oil burning)	.10	
State Highway	.10	
Dirt road surface		.20
Industrial establishment	.20	
Camping sites	.15	
Within three miles of any town or hamlet	.10	
Protective features:		
System of patrol		$0.05 to $0.10
4/5 of the property visible from lookout towers not over 10 miles away	.10	
Less than 4/5 visible, but over ½	.05	
Land posted against trespassing or (not both)	.10	
Land posted with fire notices	.02	
Nature of Stand:		
Plantation under 25 years of age: :		
Conifer	$0.30	
Broadleaf	.15	
Natural youth growth, under 25 years:		
Conifer	.30	
Broadleaf	.15	
Other pure coniferous stands	.10	
Swamp type		$0.05
Swamp type in other than conifers		.05
Owner or agent residing upon property during fire season		.05

Under this schedule the maximum rate possible would be $1.95 per $100 for a coniferous plantation under twenty-five years of age, having no protective features and being subject to all the hazards listed. The lowest rate would be for a hardwood or mixed stand located in a swamp, subject to none of the specific hazards, but having the maximum patrol and lookout protection. The rate for such property if the owner or his agent resides thereon would be 10 per $100. The remote stands will be found to run about 40c per $100, whereas the property subject to several of the major hazards would average about $1.00 per $100.

This is merely a suggeseted outline and by no means exhaustive.

The basic rate in the above schedule was mathematically determined from the existing statistics, and to the rate thus derived was applied a safety factor of 300 per cent. This safety factor is necessary to cover both inaccuracies in the statistics and increased costs due to a possible lower demand than anticipated. In other words, the basic premium rate used is the actual average rate plus a safety factor of twice the premium.

In recent years, experience, grading and rating, i.e., rates based on actual figures of past experience, has received a great deal of attention. Logically, all insurance rates should be based upon actual loss, plus expense, and plus profit, which, however, is not now the case. With a strictly equitable system of rating, there should not exist such a class of risks as there now are, known as "preferred risks." Naturally, a system which countenances such grading and rating, has caused a great deal of dissatisfaction.

Experience rating is an attempt to secure equitable rating by mathematical means, instead of, as is now the case, by the judgment of the underwriter. The objection to experience rating is that not enough figures are available upon which to base such rates, and that as no two risks are the same, an average for the group will not mean that any individual risk will receive a fair rating. The first objection, of course, presents the direct application of experience grading and rating to forest insurance. Forests are more homogeneous risks than are buildings, so that, in time, experience rates in forest insurance should be feasible. However, this depends entirely upon how the statistical material is compiled. As yet, ordinary fire insurance does not, in the minds of most underwriters, admit of the use of experience rating, simply because the statistical material on hand does not lend itself to such interpolation. The same is true of all existing forest fire statistics, and is likely to remain so, if the sole classification of damage in forest stands consists of merchantable and unmerchantable.

Sparhawk develops a very interesting method for grading and rating forest property. This method would divide our forest area into 200 to 300 regions, and then further classify each risk by type, age group, grades of inflammability, and exposure. The method is mathematically sound, and in time some such sort of grading and rating for forests will be evolved.

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*The 10 per cent was a war tax which has since been repealed.

However, it seems that a central actuarial bureau, as Sparhawk suggests, is still a dream of the future, and even after such an organization has begun to function, will be at least ten years before any experience grading and rating classification resulting from its labor could be trusted by a commercial insurance company, without applying a large safety factor.

Now, having shown what rates should be, it remains to see what timberland owners can pay. It would be unprofitable for the vast majority of timberland owners to insure their forest property for a long period of years, ultimately the entire rotation, at more than 1 per cent per annum. The prevailing economic conditions, coupled with the long period of years over which insurance charges will usually have to be carried, absorb all or nearly all of the profit finally earned. A forest plantation insured at 1 per cent. on replacement value over a period of 50 years shows a net earning of about 1 per cent. over and above the 4 per cent. used in figuring the returns on conservative investments. Such a plantation insured at 2 per cent. from the first to the twentieth year, the period of greatest hazard, and at 1 per cent. for the rest of the rotation, will show a profit about ½ of 1 per cent.

Of course, naturally, seeded stands that have cost nothing or nearly so, to produce, and having only the annual taxes, protection, and administration charged against them should show a better return. However, in most cases, 1 per cent. added on to the annual expense will be all such investments can bear, and still be looked upon with favor by the investor. No private individual will care to invest in forest property, subject as it is to many uncertainties, without a substantial return above four per cent.

Insurance Values and Adjustment of Losses

Without going into a long discussion of the whys and wherefors, the only feasible method of valuing young growth, plantations, and other stands whose value is still increasing, is to determine beforehand a fixed value upon which the owner and the insurance company agree. This net worth must then be increased annually by a sum representing the growth and quality increment for that year. These would have to be determined for various stands and soil qualities. By this method values are definitely fixed to the satisfaction of both parties.

To prevent misunderstanding as to the damage caused by a fire, a careful statement should be drawn up giving in detail the method to be used in adjusting the loss. For instance, a fire occurring in the fall can not be adjusted accurately until spring, as it is practically impossible to determine what proportion of the stand is still alive and the degree to which the living trees are injured.

If the litter and the humus is to be insured a definite value must be set, and a thorough understanding be had as to the meaning of the terms total and partial loss. Mature stands should usually be insured only at market value. The loss must be adjusted as the difference between this market value at the time of the fire and the salvage value of the timber.

It is impossible to lay down hard and fast rules governing this phase of the problem due to the diversified nature of the forest stands. However, there is no reason why equitable arrangements easily understood cannot be made for each region and type of forest stand.

The Policy.

Besides the carefully worded statements as to the value and method of adjustment just mentioned, the policy must also include a co-insurance clause so that errors can be provided for and under insurance avoided. The rates mentioned above are based on total valuation, the only logical way of determining reasonable rates. The insurance company, except in case of fire, has no way of determining whether the property is under valued. Under-valuation is especially true of property where total loss seldom occurs. Just what chance the owner is going to assume depends entirely upon that individual. Some may insure for only half value, and others for total value. But when insurance rates are based on total value, as they of necessity usually are, all pay the same rate of premium, although for the amount of premium paid in, the person who under-insures receives the most protection for his money.

For example of two forest areas of identical risk valued at $200 per acre owned by A and by B. A is insured for only $100 and B for the full value or $200. The premium rate on such risks is found to be 1 per cent. A pays only $1.00 per acre, whereas B pays $2. The possibility of total loss is slight, so A is willing to assume the chance of a loss exceeding $100. A fire occurs doing $100 worth of damage per acre. Both men receive the $100. For this protection A has only paid ½ as much as B has. After a time, the insurance company, which based its rates for such risks on total valuation, finds that this class of risks is being carried at a loss. Naturally, the rate is increased covering this class of property. Such increase inflates the burning rate for this class of property, due entirely to under-insurances.

There are two ways of meeting this difficulty, first by having a sliding rate depending upon what part of the property value is insured, and second, by placing a penalty upon under-insurance by means of the co-insurance clause. A system of sliding rates, while perhaps possible in time, would increase the already cumbersome schedule of rates to several times its present size. Such a gradation, to be just, would require accurate knowledge of the degree and frequency of under-valuation and of the possibility of the various percentages of partial losses. We have no such figures today, and it would be a long and difficult procedure to obtain reliable averages upon which to base such rates.

Co-insurance simplifies rate making and insures a just rate to all. A full co-insurance clause attached to the policy prevents under-insurance as the policyholder is made co-insurer with the company. The policyholder carries that part of the loss representing the uninsured portion of the value. Thus, in the case assumed above, A would be co-insurer for $100 per acre. In case of a $100 loss he would receive only $50, as he had only one-half of the value insured. B would receive the full $100.

Forest fire insurance must, for the present, at least, be based upon the general fire loss ratio as computed from the total value. As no appraisal of value is feasible before the acceptance of the risk, the co-insurance clause is absolutely essential. All policies on forest property, both here and abroad, have had co-insurance clause operative. In Europe, the co-insurance clause is required by law, whereas in ten of our states (Georgia, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Ohio, Tennessee and Wisconsin its use is forbidden.

Conclusion.

With the general hue and cry for a definite conservative management of forest property, a real need appears for the protection of the individual forest owner from losses by fire. It is doubtless true, that no business-like management can be secured upon private property until such protection is available. Fire protection has been said to be 90 per cent of the present forest problem, but were fire protection only 25 per cent of the forest problem, it would still not follow that conditions would be conducive to a practical policy of forest management on privately owned lands.

Forest protection is such an important part of the forestry problem upon private lands, chiefly because there is no available standing timber insurance. With timber insurance, the absolute loss might not be greatly decreased, but it would greatly decrease the uncertainty of forest investments to the individual. It would place forestry on a business basis, which is, after all, the fundamental prerequisite for the practice of forestry by the individual.

The reduction of the fire hazard by 50 per cent. will not have the desired effect. What is necessary is a definite guarantee against fire loss, not necessarily a reduction of this loss. This guarantee has been met in other fields of endeavor by insurance. It is idle to believe that it can be solved in any other way for forest property. European countries, with their intensive forestry methods, still have large fire losses. They have found standing timber insurance a distinct aid in the business of wood production. United States, with a fire loss at least five times as great, must have such protection before private forestry can be successful.

Timber insurance will bring capital into the field of forestry; a field which it has hitherto been slow to enter. Forest property will become an excellent collateral for loans. Money invested in standing timber has usually been unavailable for use; timber bonds could only be floated at exorbitant discounts. With a standing timber insurance policy bankers will show no reluctance in advancing money to a lumber company in financial straits.

No such insurance is available in the United States today, in the sense that is financially possible to most woodland owners. Insurance companies have shown a reluctance in recent years to attempt new lines, as the demand for such insurance is usually meagre. Realizing this, they have only written such insurance at rates which are little short of exorbitant, and which, if luck is with them, will yield them a large profit.

What is now necessary is an old line company to pioneer in standing timber insurance. Sufficient data on loss are available to give a general basis for insurance rates. A company is needed that is willing to sell forest insurance at a rate which the timberland owner can afford to pay. For the Northeast, this rate should not be over 1 per cent. and should ultimately be lowered to ½ of 1 per cent. Such a rate should attract forest property owners, and should, in the long run, show a handsome profit to the company. Naturally, such a company should not expect large profits, if any, during the first few years that the line is written. Fire insurance history will show that a new line seldom shows a large credit balance during the introductory years.

The company which first enters this field with a full realization of the conditions and the possibilities of standing timber insurance, will do much to promote the development of forestry in the United States.

NOTE: The original thesis of which this is an abstract is by P. A. Herbert, a recent graduate in forestry at Cornell University, and is entitled, "Standing Timber Insurance."

Copies of the thesis are on file at the following places:

Library of the New York Insurance Society,
84 William Street, New York City.
Cornell University Library,
Ithaca, N. Y.
Forestry Department Library,
Cornell University, Ithaca, N. Y.

The abstract from which the foregoing was selected was made by Professor A. B. Recknagel, of the Cornell Department of Forestry. It is reprinted from News Print Service Bureau Bulletin No. 59.

"A PROFITABLE BUSINESS?"

Just now the preliminary report of the Dominion Bureau of Statistics for the year 1921 relating to the Pulp and Paper industry has been issued and the study of this report is not only of great interest, but it causes, or should cause, grave concern for Canada's future welfare.

The report shows that Canada's consumption of Pulpwood, manufactured into Pulp, Paper and Boards, at home was 2,180,575 cords. It also shows that Canada exported during 1921 one-half of the amount consumed by her own mills or 1,092,553 cords at $14,617,610 or at $13.38 per cord.

The 2,180,578 cords used and manufactured in Canada had a selling value, according to the Bureau of Statistics, of $108,675,952.00. Canada by allowing the exportation of this huge quantity of pulpwood deprived herself of $54,338,476 in selling value. Since we did get $13.38 per cord, we gave away, deprived ourselves of prosperity in the sum of $40,720,866. Since in 1921 the Pulp and Paper Industry comprised about 100 mills of which 94 are located in Ontario, Quebec, New Brunswick and Nova Scotia, the 1,092,553 cords exported fall mostly to these four Provinces. Had we manufactured the 1,092,553 cords in Canada, we could have had 50 new mills in operation. The industry employed in 1921 about 26,611 people; had we manufactured the amount exported, another 13,300 people would have found profitable employment.

How much longer will the owners of Canada's Forests, "the people," continue to give away over 40 million dollars per year? This sum is steadily increasing as the exports nicrease. How much longer will the already scant resources last, if the people allow the annual denudation of over 360,000 acres of forests for exportation alone?

Are we trying with all our might and with the help of destructive insects and disastrous fires of all descriptions to make Canada a "Forest Bankrupt?"

FRED BROWN.

Fort Frances, Ont.

One of the grinder room foremen at the Defiance Paper Co. Niagara Falls N. Y. was seriously burned about the hands and face when a piece of galvanized iron piping that he was carrying, came into contact with a high power switch board.

Straight Talk To Salesmen

"Every day problems of the Paper Salesmen" was the subject of a talk by Mr James Home, of the Beveridge Supply Company, Limited, at the luncheon of the Montreal Paper Club at the Freeman's Hotel on January 16.

Mr. R. M. Maclean, who presided, welcomed the reappearance of Mr. S. Rodier, of the Rolland Paper Company, after his serious accident.

In the course of his speech, Mr. Home said:

"The chief problem of the Salesman these days is to find customers who will buy in decent quantities instead of hand to mouth as they have been doing for the last few years. Someone has stated that a successful Salesman is one who can sell Paper that will not come back to people who make it. That is a man's job if your house handles all grades of paper, for I would like to impress upon you who sell the fine papers that the salesman of the so-called coarse or wrapping papers have even more problems to face. He has about 200 prospects to your one. Wrapping paper salesmen calling on all kinds of stores and factories where the correct wrapping of goods is a most important detail, have a much wider field to learn. My firm has made the slogan in our wrapping department. "Goods well packed are half sold", and there is a lot in this, for goods delivered in good shape bring repeat orders, and these are what we are all looking for these days. The days when a man could wrap goods in a newspaper are gone, and all firms appreciate that their customers judge them to a large extent by the condition they deliver the goods, for correct wrapping has proved more important than extensive advantages. Whilst there are not many changes in the fine paper business from year to year, there are always new wrappings being put on the market, which the live salesman has to keep track of; and he is more likely to get repeat orders if he can give his customer some ideas that will save him something or show something that will help him to pack his goods attractively, such as a different color of wrapping paper for each department, wrapping goods in waterproof papers instead of cases, and using gummed tape instead of twine, etc."

Dealing with some of the subjects that salesmen should understand Mr. Home stated:—

"Numerous Salesmen come in to see me who cannot understand the Sales Tax; they point out that their line carries 20 per cent. profit for us, and when pointed out that it is 20 per cent. less 2½ per cent. they state we are collecting 2½ per cent. tax from our customers; but they fail to understand that their principals charge us this tax on their invoice. Many salesmen also forget that profits are figured on selling prices, and not on cost prices. For example, they will say you can make 33 1/3 profit on these goods by adding 1/3 to the cost that they quote, instead of calculating you are making 25 per cent. less 2½ per cent. The salesman should have all these facts at his finger ends. With British goods now coming in, the Salesman should also be able to quote in sterling promptly to his customer. When you sell odd size papers, find out what is the trim of the machine on which they are made; very often you can switch a customer on to another size that will run to much better advantage, and enable the mill to quote your house a price that will land the order. The same applies to printers who always want special light weights. You should be able to make the printers appreciate that there is justification for an extra change for light weight, and that very often a heavy paper will run on the press better."

Figures issued by the American Paper Trade Association showed that all orders for $10 and less were handled at a loss of 4 per cent., no order could be handled through the warehouse and office at less than $1.50. Sales records showed that in 1914, 4239 orders equalled in dollar value 7340 orders in 1921, that is, expenses would have had to be reduced 50 per cent. to get the same percentage of net profit.

Mr. Home urged that salesmen should report fully, as firms were just as much interested in hearing why orders were lost as to why orders were received. The more firms knew about the reasons for losing business the more chance there was of meeting the situation and applying remedies. "Co-operation is the biggest thing in any phase of organised efforts or in any activity to the same end. Each knows about something concerning this more than the other fellow, so pass it along and let us all have the advantage of it, and the other fellow will reciprocate by letting you have something that will help your total sales."

After a reference to the properties and uses of genuine parchment, glassive paper, and gummed paper, Mr. Home gave details of practical tests for various papers. He also worked out on a blackboard a number of questions and problems relating to papers propounded by Mr. Kay, of the Columbia Paper Company, Vancouver.

The Chairman announced that it was proposed to put into operation a question box by this means it was hoped to deal with many problems which daily confront paper salesmen. The Club was designed to help its members, and the question box was a means to that end.

PLAN 50-TON MILL FOR ALBERTA

Provided that freight rates can be obtained over the E. D. and B. C. railway which will allow them to compete with other plants in the West, Foley, Welsh and Stewart will erect a pulp mill, valued at about $3,000,000 in the Grande Prairie country, says the Edmonton Bulletin. Frederick Chase, field manager for the timber interests of the big contracting firm, states that, if the rights which they are seeking are granted, the campany will erect mills capable of shipping out 5,000 cars of pulp per year, while the enterprise would give employment to approximately 1,000 men.

Foley, Welsh and Stewart own 115,000 acres of spruce and jack pine timber in the country lying south of High Prairie and Grand Prairie, and this timber has been under the charge of Mr. Chase for the past seven years, it having been his practice to return to Canada from the States every open season for the purpose of watching it. During the past year the visitor says it has been borne in on him that the fire hazard is increasing yearly; this season he operated his own fighting force in addition to the help accorded by the Dominion forest service, and the owners of the timber feel that it is time to get the logging operations going and a force of men on the ground, in case the reserve be again in as dangerous a position as it was this year.

"Everything hinges on the railway rates," said Mr. Chase, "and if we can obtain such as will allow us to compete with the coast pulp mills, it is certain that a huge plant will go in." According to Mr. Chase, this would have a capacity of fifty tons of pulp per day, the Smokey and the Little Smokey rivers would be dammed to furnish the water power necessary, but possibly two years at least would be consumed before the plant was ready for business

Formerly Mr. Chase was superintendent of various pulp and paper plants in Minnesota.

The American Wood Pulp Corporation, 346 Madison Ave., New York City, have advised that Mr. Emanuel Salomon has severed his connection with that Company.

THE PAPER INDUSTRIES EXHIBIT.

In the Paper Industries Exposition to be held during the week, April 9th to 14th, at Grand Central Palace, New York, while the American Paper & Pulp Association and its related associations are meeting, three main groups will feature the list of exhibits at the Paper Industries Exposition, as part of the general program which provides for the telling of the whole story of paper from the forest to the ultimate consumer, to the great American Public.

Although there will be no rigid rules for the placing of exhibits in sections, there will be, as indicated by the manner in which exhibitors are already contracting for space, some classification of exhibits. These will be arranged in a general way according to the three chief steps in the progress of manufacture and distribution, the first being the paper making machinery and the chemicals entering into the manufacture of paper. The second will be the making of paper itself, and the third the conversion of paper into its various sub-divisions in which it reaches the public, such as boxes, twine, and specialties, as well as the large field of distribution to printer and consumer in the form of writing paper and other papers.

The general scheme of organization of the Paper Industries Exposition has already been formulated, and many booths contracted for. An entire floor of the Grand Central Palace has been set aside for the Exposition, and space divided into about 200 booths. These booths are of standard design, although varying slightly in size. Some are 10 x 10 feet in size, others 14 x 14 feet, and a few even larger. All, however, will be equipped in uniform design, with partitions, railings and the like furnished by the Exposition management to assure the maintenance of a reasonably standard design in all the booths. To continue this spirit, the sign lettering for all booths will be done in a uniform style.

The manufacturers of paper mill supplies have been prompt to take advantage of this opportunity to present their equipment to the paper mill executives who will be at the Exposition. A large attendance of paper manufacturers and merchants during the week is assured because of the fact that the Paper Industries Exposition will be held during the week of the annual conventions of American Pulp and Paper and the National Paper Trade Associations and their affiliated organizations. The manufacturers of beaters, rolls and other similar heavy equipment are already well represented among the exhibitors as are also the chemical supply companies, which sell bleachers, colors and all of the wide range of chemicals entering into the manufacture of a sheet of paper.

The manufacturers of specialties, such as boxes, paper, twine and the like are included among those who have already, though the Exposition is still nearly three months distant, contracted for exhibit space.

The chief efforts of the Paper Industries Exposition management, however, have at the outset been devoted to the securing of educational exhibits, not the sale of space for commercial exhibits. The Forest Products Laboratory, of Madison, Wis., and the Research Laboratory of the United States Forest Service, have been invited to present an exhibit in space to be donated by the Exposition management. Correspondence has also been initiated with several other public agencies which are interested in the manufacture of paper. An effort, for instance, is being made to have a special exhibit of the United States Bureau of Standards, which operates its own paper mill at the laboratory in Washington, where tests are made of paper made by different processes from miscellaneous materials, as was the case when tests were recently made of the use of rubber latex in making paper.

"Seldom in our long exposition experience has there been such an early interest manifested in any exposition as in this effort to tell the story of paper," said Charles F. Roth of the Paper Industries Exposition management, "and this early interest seems to secure even at this early date success for the enterprise."

FIFTY MILLION DOLLARS WASTED YEARLY ON WASTE PAPER.

That the United States at a minimum estimate uselessly destroys waste paper worth at present prices, about $50,000,000 a year is the estimate made by the American Pulp and Paper Association, the central organization of the paper manufacturers of the United States.

The amount destroyed needlessly each year is about equivalent to the amount which is used in the paper mills. The deinking of old newspapers for the making of new newsprint, the reconversion of paper into pulp for the use of the makers of book and similar papers, and the use of waste paper of all kinds for the making of boards for paper boxes offer an increasingly broad market for the use of old paper.

The average consumption of paper is now nearly seven million tons annually. The consumption of old paper this year will amount to about 2,000,000 tons, which will cost the paper industry about $50,000,000 or about $25 per ton. What becomes of the paper manufactured but not now turned back into industry in the form of waste paper for re-pulping is an interesting question, for which there is no definite answer. If there is now used only about two million tons of old paper annually, there is left over four million tons unaccounted for. Of this amount undoubtedly a large amount is preserved in the form of books, as permanent records of correspondence, documents and the like.

To be conservative, estimating that more than half of this four million tons goes into such permanent libraries and office records, there is still some two million tons unaccounted for, which is undoubtedly carelessly destroyed.

Every six tons of waste paper used in making new paper is estimated to represent the equivalent of wood pulp secured from one acre of pulp wood forest. On this basis the paper industry by re-using old paper, to the total of 2,000,000 tons in 1922 saved from cutting nearly three quarters of a million acres of pulp wood timber, and the public by failing to save the same amount of waste paper, caused the unnecessary destruction of an equal amount of forest. The low production of paper in the 1921 depression is undoubtedly in part responsible for the shortage of waste paper which during 1922 has been such that at times the prices charged the mill by the waste paper collectors has been higher than the prices of new wood pulp. The result has been that housewives have been able for the last few months to get a price for their old paper that would justify their keeping it for sale to the junk dealer.

Parchments being scarce in the fifteenth century, manuscripts of classics were sometimes used to cover tennis racquets.

PULP AND PAPER NEWS

George H. Mead, Dayton, Ohio, President of the Spanish River Pulp and Paper Mills, Limited, and W. N. Hurlbut, H. Conway and Dr. Merchant, of the George H. Mead Company at Dayton, were in Toronto a few days ago where they joined Vice-President Col. Thomas Gibson and Secretary J. G. Gibson in a trip to Sault Ste. Marie for the President's annual dinner at which the executives and heads of departments of the various mills were present.

Board and pulp mills have been advised by Ottawa that pulp board in rolls for use in the manufacture of wall board will henceforth, by an order-in-Council, be subjected to the following reduced duty: British preferential tariff, free; intermediate and general tariff, five per cent ad valorem. At present pulp board does not appear in the customs tariff as a specific item but if classified under pulp or wood or straw, it is liable to import duty of fifteen per cent preferential and twenty-five per cent intermediate and general.

David F. Robertson, General Manager of the Canada Paper Board Company, Limited, Montreal, was in Toronto last week calling on the paper trade.

Kenneth Toy has succeeded Beverley B. McGuire as Western Ontario salesman for the Provincial Paper Mills, Limited, Toronto, Mr. McGuire having taken over the city travelling.

Although Dan Daverin, the former superintendent of the Montrose Division of the Provincial Paper Mills, Limited, will not confirm the rumor, it is freely stated in Thorold and vicinity that a project is on foot, with Mr. Daverin as the moving spirit, to erect a new paper mill in that town for the manufacture of high grade writings, bonds, etc. It is said that a number of Canadian and American financiers have been interested and that a site has already been surveyed close to the canal.

Thomas Conlon, a prominent business man of St. Catharines, Ont., for many years, died in that city on January 15. The late Mr. Conlon was born in Mayo, Ireland, and when but four years of age his parents left Ireland for Canada with their family of eight children. Ship fever broke out and amongst those who died were the father and five children of the Conlon family. The survivors settled in Thorold, where for over fifty years the two brothers, John and Thomas Conlon, carried on a business partnership, the late John Conlon being president of the Lincoln Paper Mills. The two brothers held construction contracts on the Welland Canal in 1875 and acquired large lumber interests at Little Current.

The discussion of forest supervision measures to be adopted next year, with a view to reducing to a minimum the possibility of a recurrence of this year's holocaust, was the purpose which summoned the forest engineers of Ontario into consultation with Crown officials at the Parliament Buildings in Toronto last week. The methods which the Government intends to adopt involve the extension of the aircraft patrol system, which was so successful last year in the Georgian Bay District, and a more general use of look-out towers and telephone connections. Measures of reforestation were also discussed at the conference.

It was announced in Toronto last week that Ben Logie, formerly manager of the Toronto branch of the E. B. Eddy Co., Limited, has been appointed city traveller for the Lincoln Paper Mills under the local manager, George Winlow.

The Fred H. Halls Paper Company, Limited, Adelaide Street, Toronto, have opened a branch warehouse and office in London, Ont., at 90 York Street, for the handling of their Western Ontario trade. Fred Halls, Jr., who has been in the Toronto office for the past seven years, will be in charge and the company will stock a full line of books, bonds, ledgers, etc., in their new branch which will be in operation about the end of January.

John Ebbells, of the American Writing Paper Company, New York, was a caller on the Toronto paper trade last week.

The Fred H. Halls Paper Company, Adelaide Street, Toronto, have been doing some extensive advertising of late, one of the features of which was the offering of prizes for brief essays on the best uses to which Brocade cover paper might be put.

J. Goodwin, of the Richmond Paper Company, Virginia, called on the paper trade in Toronto last week.

The midwinter number of the Wrightcroft Review, a quarterly publication devoted to the betterment of printing, and put out as a house organ by Croft and Wright, Peter Street, Toronto, has been put in the mails. It is done on Byronic Book Blue and is very attractively gotten up.

The F. W. Fisher Company, Limited, manufacturers of paper boxes, held their annual employees' gathering at the factory on Sherbourne Street recently, the event taking the form of a dinner and dance.

The company have recently added a printing plant to their already well-equipped factory, with William Fox, formerly of the Rapid Carton Company, in charge of this branch of the work.

At the January meeting of the Toronto Carton Club the members took a survey of the years operations which, taken on the whole, were satisfactory. It was reported at the meeting that the outlook for good business in 1923 was bright.

Copies of the Fort William Times-Journal special number published on January 16th have reached the head office of the Fort William Paper Company, Limited, Bank of Hamilton Building, Toronto. It was the first paper printed on newsprint produced by a Fort William mill. The paper on which the number was printed was from the first rolls of the commercial product turned out from the new paper mill of the Fort William Paper Company and the sample was a very creditable one.

Bert Costesdu was instantly killed at the Beaver Board plant at Thorold a few days ago, when his clothing became tangled in a revolving shaft. He was whirled around by the shaft before the machine could be stopped. The unfortunate young man was only 17 years of age and was just preparing to leave work when the accident took place.

Word has been received in Toronto from Kenora that the large pulp mill being erected there by Backus and

Brooks Company is now almost completed, and it is expected that it will be in operation early in March. Work will be commenced on the excavation for the paper mill, which is projected, early in the spring. Backus and Brooks Company is spending in the neighborhood of $2,000,000 on the erection of the pulp mill and the plant for power development. The pulp wood will be cut in the Lake of the Woods district where large reserves are held. It is expected that 165 men will be employed in the pulp mill.

The death took place in Toronto on January 18 of Aubrey O. Hurst, who was widely known in the Canadian paper trade through his connection with a number of English paper and stationery houses which he represented in this country. Deceased was fifty-seven years of age and had been ill for some months. A wife and one daughter survive, his son, A. Clive Hurst, of the Royal Air force having been killed in 1918.

The annual meeting of the British American Wax Paper Company, Limited, Carlaw Avenue, Toronto, was held a few days ago when the following officers were elected: James MacArthur, President and General Manager; W. J. Moffatt , Vice-President; William Rose, Secretary. The company report a decided improvement lately in the demand for wax papers, the closing months of 1922 having been particularly brisk. Orders are coming in freely and trade has been so active that the company is now several months behind in their deliveries.

Heyes Brothers, manufacturers of folding boxes, have started operations in premises on St. Helens Avenue, Toronto.

Dyment, Limited, manufacturers of folding boxes, have moved from Ryerson Avenue to the Wrigley Building, Carlaw Avenue, Toronto, and will enlarge their lines and output.

The manufacturers of wax paper in Toronto and district have formed a council which will hold regular meetings for the discussion of trade matters. The organization embraces all the leading members of the trade in the district, and is designed to promote the interest and welfare of the wax paper industry in all its aspects. S. J. Frame is the secretary-treasurer.

Among the paper trade visitors to Toronto last week were: R. F. Dobberleen, of the sales staff of the Standard Paper Co., Kalamazoo, Mich.; F. W. Snyder, of the Warren Manufacturing Company, New York, manufacturers of glassine, rope and jute paper and Charles E. Whitton, of the Canadian Paper Board Company, Limited, Montreal.

BOOTH AND O'BRIEN IN TIMBER DISPUTE

Hearing of evidence in the timber land dispute between the Attorney-General for Ontario and the Golden Lake Lumber Company as plaintiffs, and J. R. Booth, Limited, as defendant, commenced before Mr. Justice Middleton in the Supreme Court of Ontario on January 8. The action deals with the title to 44 square miles of timber between the Bonnechere and the Petewawa rivers. If successful the Golden Lake Lumber Company, which is part of the M. J. O'Brien interests will claim a sum in the neighborhood of $50,000 for timber which they state was cut from land under lease to them.

The dispute is a long-standing one. The case commenced over a year ago, but was adjourned owing to the sudden illness of W. R. White, K. C., one of the counsel for, M. J. O'Brien, Limited.

Service needs time, money and brains.

PAPER MILL IN SOUTH AFRICA

U. S. Consul George K. Donald, Johannesburg, writes in Commerce Reports: "A new paper mill, valued at £65,000, has recently commenced operations in South Africa under the direction of the Premier Paper Mills (Ltd.) at Klip River, about 18 miles from Johannesburg. The capacity of the plant is 150 tons of kraft and other wrapping paper per month, but slight alterations will make possible a monthly production of 250 tons—enough to take care of the whole South Africa demand. Experiments were made with the view of using native grasses, but the failure of this experiment has necessitated the importation of wood pulp.

"Canadian competition is said to be very keen. There is no protective tariff and dumping methods are said to have been used. In 1918, South Africa imported wrapping paper to the value of $1,623,885 (converting the pound sterling at $5), of which Sweden supplied $628,255 and the United States $149,655. Canada took the lead in 1921 with $524,390 out of the total of $1,110,520, while the United States only shipped $20,940 worth of wrapping paper to South Africa in that year."

AUSTRALIAN PAPER INDUSTRY

Every effort is being made to promote the manufacture of paper and boards in Australia, according to a statement in a recent issue of the World's Paper Trade Review. Experiments with native woods, grasses, and fiber wastes were conducted, but so far no material has been found to supply the local mills with pulp. The situation is helped by the admission free of duty of all materials for paper making, while an increased duty is levied on finished paper and board similar to that manufactured at home. Paper from the United Kingdom enjoys a preferential tariff of 10 per cent., and, as a result, sales of the latter have constantly increased.

PAPER MILL LUBRICATION

A very nice piece of literature has just been issued by the Imperial Oil Ltd. Toronto. This publication is the result of an exhaustive bit of research into the matter of proper lubrication of pulp and paper mill machinery. The work is so well and so thoroughly done that we hesitate to venture any comment upon it except to say that we consider it undoubtedly the best thing on the subject that has ever been done. It could well serve as a textbook or a reference volume for those who are interested in this subject. It is certainly one of the most valued pieces of literature in our office, and would be unusually helpful not only to the purchasing agent who has charge of the buying of lubricants for pulp and paper mills, but particularly for the serious study of the operators of the various machines which are so carefully described with respect to their proper lubrication.

No mention is made of the price so it is assumed that it is for free distribution on application of responsible parties to the Imperial Oil Ltd, in Toronto, or to Vacum Oil Company, New York. We venture to suggest however, that once a copy of this book makes its appearance in mills, the edition will soon be exhausted. We would, therefore, advise our readers to make application promptly.

Make your motto: "Wreckless" not Reckless."

Indeed, no one can have a true idea of right, until he does it; any genuine reverence for it, till he has done it often and with cost; any peace ineffable in it, till he does it always and with alacrity.—James Martineau.

UNITED STATES NOTES

The Petterbone Cataract Paper Co. of Niagara Falls N. Y. which has been closed down recently on account of a fire in their wheel pit, expects to resume operations in about two weeks

The Cliff Paper Co. of Niagara Falls N. Y. will install a 500 horsepower Sterling water tube boiler, which will be fired either by powdered coal or oil.

Col. Henry S. Graves, dean of the Yale School of Forestry, and former chief forester of the United States, was elected president of the American Forestry Association at the annual meeting of that organization held at the Hotel Commodore, New York City, last week. In accepting, the new president gave warning that the association must take a position of dominant leadership on behalf of the public in fighting every effort of special interests to undermine sound principles of forest conservation. "Our task," he said, "is to carry forward the movement of forestry to definite, practical achievement. Its mission is to stop the devastating forest fires, to get forestry into actual practice, to restore what has been destroyed, to bring about a more economical use of forest products and make the forest of greater service in recreation and as the home of wild life."

Delay in deciding upon a national reforestation policy has caused losses totalling billions of dollars to users of timber, newsprint paper and all wood materials, declared Senator Pat Harrison of Mississippi in a speech in the Senate last Friday. Senator Harrison was speaking in advocacy of his resolution directing the appointment of a committee of five Senators to investigate the timber problem with the purpose of developing a real conservation policy. The resolution has been uninimously reported out by the Committee on Agriculture and Forestry.

A club has just been formed by Owen Shepherd, treasurer of the International Paper Company, known as the Quarter-Century Society, Inc. As its name suggests, it is to be composed of such officers and employees as have been in the continuous service of the company since its formation twenty-five yars ago. The twenty-five year men have incorporated under the New York State law, giving as their purpose the promotion of good fellowship and cooperation. Twenty-two have qualified as charter members of the Society. The officers are: G. F. Underwood, president; C. W. Lyman, Vice-President; Owen Shepherd, vice-presdent; A. H. White, vice-president; J. E. A. Hussey, secretary; G. E. Smith, treasurer.

Movements of wood products to the railroad and to the mills has begun in the North country, according to a Duluth report. Woods operators are rushing to take advantage of favorable weather conditions, the swamps being solidly frozen. Great activity is reported from every section of the woods and in some cases there is a slight shortage of help.

Retaliatory provisions of the new Tariff Act were invoked last week by the Treasury Department against imports of pulpwood cut from the crown lands in the Province of New Brunswick, Can., and customs collectors were instructed to impose a duty of $1 per 1000 feet on such imports until further notice. Logs cut from the private lands in the Province of New Brunswick, however, will be admitted free. The action was taken under paragraph 401 of the Act, which provides for the prescribed duty on logs of fir, spruce, cedar or western hemlock, where there is evidence that there has been a restriction upon their exportation during the twelve months preceding their importation into the United States.

George W. Gair, president of the Robert Gair Company, Brooklyn, manufacturers of paperboard containers and paper products, has given out a statement summarizing general business and industrial conditions as follows:

"Our business is usually considered a barometer of general trade conditions. Our product is used entirely in the packing and selling of nearly all other products, whether they are for every day use or in the nature of a luxury; therefore, our mills and factories respond quickly to the general trend of business and quite accurately reflect prevailing and prospectve conditions. During the past few months, this trend has been decidedly in the right direction, and the indications now are that the volume of business will be greater than we have known for the past two years. Buyers are calling for earlier deliveries and in larger quantities, thereby evidencing theier belief that the demand for their goods will be in the same proportion. We do not look for the inflation of 1920, but expect normal, healthy business throughout the year, and there is every reason to believe that good times are already with us. Most of the problems of the past two years have been settled; at least we have seen the worst. The country has liquidated, unemployment is less, inventories are low and with one hundred and ten million people consuming the production of a country so large and self-contained as the United States, the year ahead should be one of prosperity."

The United States Envelope Company building in Holyoke, Mass., has been purchased by the Chemical Paper Manufacturing Company, which plans to use it for general offices and storage. The manufacturing equipment of the envelope plant will be moved to their divisions of the United States Envelope Company, largely to the new buildings recently completed as an addition to the Springfield division. Most of the 280 men that are employed in the Holyoke division of the envelope company will lose their places through the transfer.

In a suit filed with the United States Supreme Court, the Eibel Process Company charges the Minnesota and Ontario Paper Company of International Falls, Minn., with infringement of the Eibel patents on wires for paper making machines.

An increase in wages of from 5 to 8 cents an hour went into effect January 15 in most of the paper mills of Holyoke following conferences between representatives of the employers and the papermakers.

Increases of 6 to 7 per cent. in the pay of approximately one-third of its total manufacturing force have just been made, by the International Paper Company, according to Allen Curtis, vice-president of the company. Practically all the International mills are affected by this advance. Mr. Curtis stated that the company felt that its skilled employees deserved a wage increase.

The Markets

CANADIAN TRADE CONDITIONS

Toronto, Jan. 20. — Based on the amount of business transacted so far in the opening month of the New Year paper mills and jobbing houses in Ontario are looking forward to a satisfactory volume of trade during 1923. A tone of hopefulness and optimism prevades the industry generally and a conviction exists that the year is going to produce, good business, although it is conceded that it is somewhat early to judge just what 1923 has in store. Both mills and distributors report a better consumption of paper than was anticipated. True, no big orders are being booked and the printing trade in Toronto and other large centres is somewhat quiet but enough small business is being done this month by jobbing houses to indicate that the trade is in a healthy condition while most manufacturing plants have sufficient orders ahead to ensure a busy fall. Prices in all lines are holding firm and in one instance—paper bags—a ten per cent increase became effective the middle of the month. Prices in most lines show an upward tendency.

PULP. — Low water conditions are mainly responsible for a scarcity of ground wood pulp which is almost daily becoming more marked. Paper mills report the product extremely hard to get even at a price of $50 which is now being paid at the mill and which appears to be the top price. Perhaps a more representative figure reflecting the actual price is around $45 with $42 as the low figure although it is stated that as high as $50 has been paid. The situation in respect to ground wood is expected to ease off the latter part of January if the usual January thaw materializes. The market is somewhat easier on all natural sulphite pulp lines and the manufacturers are showing some anxiety to sell. Generally speaking the demand is less than the supply. Bleached sulphite is quoted at $90 to $100 unbleached at $55 to $75, and news grade at $55.

RAG AND PAPER STOCKS. — The market generally in these lines is unsettled and there is a tendency to fairly high prices. Paper mills are anxious to buy but do not want to pay the price, while American mills are offering premiums for tonnages. Newspapers moved up last week from $1.35 to $1.40 to $1.40 to $1.50 and mixed papers, No. 1, rase from $1.15 to $1.30; No. 1 miscellaneous from $1.10 to $1.25 and No. 2 miscellaneous from 90c to $1.00.

PAPER BAGS. — An increase of ten per cent went into effect the middle of the month and revised discount lists were issued to the jobbers affecting heavy manila, light manila, unglazed kraft, light kraft, gusset sides, flat bags, etc. Car lots for territory east of Fort William only shall be 2 per cent extra discount over the 500 M discount, according to the revised list.

COATED PAPERS. — Coated paper mills report a fair volume of business passing with the machines running steadily. They are still paying a high price for casein and one mill in the Toronto district, with only two days supply on hand succeeded in getting a few cars last week. Most of the mills feel that coated paper should go up in price, but the printer says he can get the Old Country product laid down here as cheaply as the Canadian product at the present price and it is known that Old Country mills are making a strong bid for Ontario business. However, the Ontario buyer finds that he cannot get the odd sizes in the imported stuff and this has hampered to some extent the campaign of the English mills to sell in this market. It is not likely that any price changes will go into effect until after the Montreal convention.

KRAFT. — Kraft manufacturers report that the mills are all busy and the demand for the product keeps up well. Quotations are as follows: M. G., $8.00 per one hundred pounds; M. G., $8.15; kraft pulp, $70, f. o. b. mill.

BOX BOARD. — The demand keeps up well for board and mills and distributors are busy. Prices across the line registered a ten per cent increase during the past few days and it looks as if further increases in domestic lines might follow shortly.

NEW YORK MARKETS

New York, January 20 — (Special Correspondence) — Increasing activity in and further sharp advances in prices of raw materials entering into the manufacture of paper and paper board have featured the markets in New York this week. The present situation in papermaking raw stock is, to say the least, somewhat unusual for this time of the year. It is extraordinary for these materials to be exhibiting such a strong price tone and for quotations to be rising at the rate that has been noted during the past several weeks during the first month of the year. As a general thing, January is a comparatively quiet period for papermaking raw materials, but a livelier situation has been experienced thus far this month than probably ever before has been recorded so early in the year.

Obviously the rapid increase in raw material cost is having influence on the finished product. Manufacturers are more cautious about entering selling commitments involving sizeable amounts of paper and board, and there is a distinct advancing tendency in prices of various kinds of paper. In most cases the advance in raw material has not been as yet followed by a proportionate rise in prices of the finished product, but it stands to reason that quotations on the latter must sooner or later be readjusted to conform with the new levels established on the former. Paper manufacturers cannot go on producing paper with high-priced raw material, and marketing their product at previous prices, with the result that higher prices for paper certainly seem in prospect.

Everything considered, there is a steady movement of fairly broad proportions current in nearly all kinds of paper. Consumers are buying in consistent fashion and are gradually increasing the volume of their orders. Reports from manufacturing centers tell of good activity among the mills. There has been a pronounced pick up in demand for most grades of paper since the quieting effects of the holidays wore off, and it can safely be stated that a large majority of paper mills in the United States are now operating at very close to full production. Moreover, they are finding a ready outlet for their product. Activity in the printing and publishing industries is steadily on the rise and this leads to a heavier consumption of paper. Improvement in business generally is making for a larger use of paper of all kinds, which, of course, is being reflected in the paper manufacturing industry.

Prices of box boards are exhibiting much strength. There has been a considerable advance in quotations within the past several weeks, and the tendency continues strongly upward. The principal reason for the firm position of board is the surprising rise in old waste paper, which constitutes the chief raw material for the board mills. Most grades of old paper have advanced 100 per cent. in the past six weeks, or very close to that percentage, and board manufacturers have been obliged to raise their quotations to customers. Plain chip board is quoted in New York at present at a minimum of $65 a ton f.o.b. this city, and a good many mills are asking $70 and are reluctant about accepting orders at below this latter basis. News board is quoted at $70 and up to $75. Even at these prices boards are placed at relatively cheaper figures than a month ago when the cost of production was proportionately less, and many in the trade look for additional advances unless, of course, something happens in the raw material situation which will enable manufacturers to buy raw stock cheaper.

Newsprint is in a very strong market position. Consumption keeps up at a high point and there is every indication that a new record of newsprint consumption will be established this year. Reports of sharp advancement in prices of print paper in Germany have been inclined to look to imported supplies of newsprint to fill a part of their requirements over the next few months are more skeptical of securing expected amounts of paper from such sources and therefore are brought into the domestic market for additional lots of paper. The spot situation in newsprint is firm and sellers are reported getting premiums for most of the print paper sold to spot buyers owing to the small amounts mills have to dispose of over and above their contract commitments.

Fine papers are moving in satisfactory volume and consumers are gradually ordering larger quantities of bonds and ledgers. Prices are firm and on the rise though manufacturers are proceeding slowly in readjusting quotations. Wrappings are in good demand and quotably steady, and there is a splendid call for tissue papers, especially the coarse grades. Book papers are moving in steadily increasing volume. Contract business is nearly as large as it has ever been, and spot demand is active and expanding. Between 7 and 7.50 cents per pound f.o.b. New York is still the ruling quotational range on machine finished book paper.

GROUND WOOD. — There is a firm tone to the market for mechanical pulp. Demand for this commodity is on the rise, and, as mill stocks are lower than they have been in six months or longer and as producers are prevented from enlarging their output because of unfavorable water conditions in most grinding districts, the law of supply and demand is making for a very strong price tone. Around $45 a ton at grinding plants is regarded as an average of quotations on prime spruce ground wood for prompt shipment, yet higher prices than this have been heard. Up to $47 and $48 a ton is said to have been secured in some cases for ground wood, and it would appear as if the market is headed for the $50 mark. Newsprint manufacturers are absorbing supplies in consistent

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fashion and there is a good demand from board mills. Many producers, having but small stocks, are holding surplus pulp for their own use, and offerings in sizeable tonnage are fewer than in a long time.

CHEMICAL PULP. The market for chemical wood pulp is steadily assuming a stronger complexion. Demand is reported active and to be expanding for most kinds of pulp, and as this is the time of the year when, as supplies automatically decrease, sellers appear to be having no great difficulty in securing the prices asked. Reports regarding the strike of workers in the Swedish pulp mills have had a bullish influence on foreign pulps, particularly kraft pulp. Latest advices say that one-fourth of the pulp mill workmen in Sweden are on strike, and some of the biggest mills in Scandinavia are said to be involved, thus materially reducing the pulp output in that country. The workers demand a 20 per cent. increase in wages, and the pulp mill owners desire to cut wages the same amount. Efforts are being made to settle the strike, and it is understood an arbitration meeting was scheduled for yesterday, but no information regarding the outcome of this meeting has yet been received here.

Importers are asking at least 2.85 cents per pound ex dock for No. 1 Swedish kraft pulp on the spot here, and higher than this price is quoted in some quarters. Unbleached sulphite is moving freely at steady prices, and there is a good contract movement of bleached sulphite though fresh demand for the latter is rather slow. Soda pulp is firm at around 4.25 cents a pound at producing mills and is favorad with a good demand.

RAGS. — Low grades of papermaking rags used by felt paper mills continue in a booming position, and further increases in price have been recorded. No. 1 roofing stock has sold at 1.45 cents per pound f.o.b. New York, and No. 2 packing at 1.35 cents, and dealers are said to be extremely careful about entering selling commitments, most of them refusing to book orders excepting for limited quantities of rags. Old whites show an advancing trend, and thirds and blues are rising, due in part to the situation in roofing rags. New cuttings are firm and dealers are talking higher prices notwithstanding that market levels already are on a high parity with normal. New No. 1 white shirt cuttings are quoted at around 12.25 cents a pound f.o.b. New York, fancy shirt cuttings at 6.50 cents, light silesias at 8 cents, unbleached muslins at 10.50 cents, blue overall cuttings at 7 cents, light flannelettes at 9.50 cents, and washables at 4.75 cents.

PAPER STOCK. — Prices of waste paper have continued to climb and most grades are now quoted at levels which constitute a record for more than a year, as at no time during 1922 did the market go as high as at present. There is a great deal of talk among dealers and packers about a shortage of old paper. It is said that no more than half of the usual amounts of material are being obtained from many production sources, and that, contrary to usual procedure, the high prices prevailing have failed to bring out larger supplies. Low grades are especially strong in price, reflecting the demand from box board mills. Folded newspapers have sold at 1.65 cents a pound f.o.b. New York, and No. 1 mixed paper at 1.45 cents, and reports have told of some sales in excess of these figures. Old No. 1 kraft paper has jumped to around 2.40 cents per pound New York, and white blank news cuttings have sold at 2.35 cents. Old flat magazines are readily bringing 2.65 cents a pound f.o.b. this city, mixed books and magazines 2.25 cents, and ledger stock 2.85 cents. Shavings hold firm at from 4.25 cents a pound upwards for No. 1 hard white, and about 3.75 cents for No. 1 soft white shavings.

OLD ROPE AND BAGGING. — Dealers in common are asking 6.25 cents a pound at shipping points for No. 1 domestic manila rope and seem to be having no trouble in securing this price from paper mills. Demand for rope is good and proof is not wanting that available supplies are light. The feature in old bagging is the improved call for roofing bagging, which has sold at 90 cents a hundred pounds f.o.b. New York. No. 1 scrap bagging is quoted at between a cent per pound and 1.15 cents, depending on the quality of packing.

U. S. Forestry Notes.

A change in the New York State law so that the same principle of taxation applied to agricultural lands was advocated by Clifford R. Pettes, Superintendent of State Forests for New York State, in a paper read at the recent session of the Society of American Foresters at Boston, Mass. Mr. Pettes pointed out that a growing forest was a crop, but that at present forest crops were assessed while farm crops were not assessed. He urged that forest lands should be assessed and taxed only upon the land value, exclusive of the growing wood.

Noting that the world is assuming a growing attitude of prudence toward its natural resources, Chief Forester William B. Greeley, in his annual report, urges greater endeavors in this direction for the timber supply in the United States. To take stock of how much wood there is and what shall be needed is an important step in determining the nation's future attitude toward it's forests, he says. "As a background to this broad inquiry," Col. Greeley reports, "forest service investigators have recently completed a unique and exhaustive compilation of the forest resources of the world. One startling revelation is that as far as our great structural and all purpose woods—the soft woods—are concerned, we must become self-sufficient or go without."

The Paper Manufacturers' Company, Philadelphia, Pa., has under construction a new half million dollar six story and basement building which, when completed, will be used for paper storage, paper converting and to house the company's executive offices. The building is going up on a site at the southwest corner of Fifth and Willow street. It will be ready for occupancy about July 1.

Speaking at a joint meeting of the American and New York State Forestry Associations, Alexander MacDonald, New York State Conservation Commissioner, discussed plans for an intensive drive for the reforestation of New York's idle land and the preparatory work that has already been done to start the movement on a practical basis. Mr. MacDonald cited figures to show that the forests are being cut five times as fast as they are growing. He said that the State has however, laid the foundation for the replacement and intelligent use of its forest resources. "Twenty years of practical experience has demonstrated that trees can be grown successfully and econmically in the State nurseries and supplied to private owners at an average price of less than $3 a thousand. For planting on public land they are supplierd free. A campaign of education will be conducted to show that planted trees under proper management area profitable investment.

CONCERNING ARGHAN

Every so often some observer becomes attracted to a plant whose seeds or stems contain fiber and there is started a brief public interest in its possibilities. The fiber most often considered in this way is probably that of the common milkweed, the bursting seed pads of which expose a wealth of glistening snow-white filaments on every October roadside. Its potentially useful fiber, however, is contained rather in the stems of the plant than in the fruit. War-time necessity, due to the lack of cotton, caused Germany to take up with, not the flax known and used by them for centuries, but another newcomer in the field, the bast fiber of nettles, about which today, however, there is very little said, indeed.

Some time ago we heard a great deal of the possibilities of other nettles — ramie and rhea or china grass; the products of which as made by the Chinese have a peculiar beauty not to be seen in any similar commercial articles. A like material, incidentally, is contained in the Canada nettle (Laportea canadensis.)

Nature provides a tremendous range of materials from which cellulose and ligneous fibers can be had. The development of most of them will possibly never occur because of economic conditions, which bring about not the use of the finest, most silky and strong, material to be found, but of the cheapest, most easily available, and that which fits in with the machinery developed by centuries of slow progress. Flax, the one fiber, easiest to produce, most prolific and offering at the same time a byproduct of great value in the form of oil, is falling out of use, because its processing has not kept up in mechanical development with, and is inherently more difficult than those of its competitors.

As has been previously mentioned in these columns great interest is being shown in the fiber "arghan," found in use by the natives of South American jungles by Sir Henry Wickham, while exploring for supplies of rubber. Being brought to attention of Mr. Henry Wilson, of the Belfast Ropework Co., its possibilities as a fiber usable in place of Manila, New Zealand, or Italian hemp, were at once apparent.

Tests proved it the strongest of all fibers by some 50 per cent, and in other ways considerably like Italian hemp in resisting the effects of dampness and in bleaching, dyeing, spinning and weaving qualities, although in these last two respects it has not equalled the hemp.

In 1918 an expedition to its origin brought back roots of this useful type of "century plant" which were transplanted in the Malay peninsula where it seemed adaptable as an alternative to the culture of rubber which has been suffering since the armistice from overproduction. The local government donated the use of an enormous tract to the Arghan Company, which is controlled largely by cordage men of high standing.

Subsidiaries have been formed to supply the flax trade.

The new fiber, of which by the way we have a small sample in this office, is nearly white, of great length, softer than most bast fibers, and seems finely divisible. It has already been spun to a fineness of 5,700 yards per pound, which is nearly single sevens, cotton counts, and has been woven with no great difficulty in canvas resembling flax canvas.

Why not a Canadian Company, to produce this material in Honduras, Guiana, or the West Indies, and to manufacture and distribute it in and from Canada for the Western Hemisphere? Its growth and separation as fiber are known to be very simple, we have the ability to organize, manufacture and sell. All that is lacking seems to be initiative.

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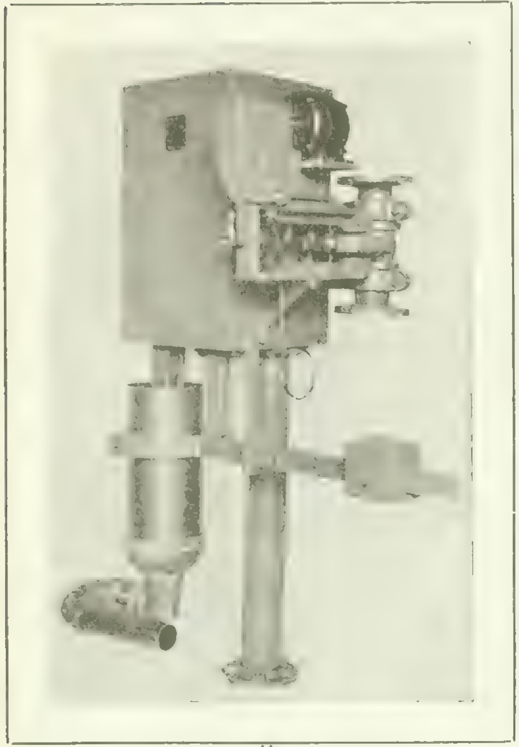

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President of the Canadian Pulp & Paper Association.

The Pulp and Paper Convention 1923

The concensus of opinion regarding the annual convention of the Canadian Pulp and Paper Association was that the whole affair was most successful and enjoyable. By happy coordination of arrangement, there occurred in Montreal during the past week, a number of other annual meetings of Associations closely related to the work done by the Canadian Pulp and Paper Association. The Canadian Forestry Association met on Monday, the Quebec Forest Fire Protective Association met on Tuesday, the Canadian Society of Forest Engineers met on Wednesday, the Technical Section of the Canadian Pulp and Paper Association met on Wednesday and Thursday, the Woodlands Section, of the same body, met on Thursday and the annual business meeting with attendant functions of the Canadian Pulp and Paper Association was held on Friday. The Canadian Lumbermen's Association also met during the week and honor was reflected on the Pulp and Paper Makers in the election to the presidency of that organization of Mr. Angus McLean, president of the Bathurst Company.

There was practically a week of meetings dealing with woods operation and the protection of the forest. A number of exceptionally good papers were presented, and a number of these will be reproduced later on in the Pulp and Paper Magazine. A very pleasing feature of the Forestry program for the week was the complimentary luncheon tendered on Wednesday noon by Mr. F. J. D. Barnjum to the Canadian Society of Forest Engineers and the visiting foresters who attracted to Montreal for the program.

In the report of Mr. Robson Black, submitted to the annual meeting of the Canadian Forestry Association, held in Montreal on January 22, the Executive Council of the Canadian Pulp and Paper Association was thanked for the unqualified endorsation of the work of the Forestry Association and also for the recommendation that the members of the Pulp and Paper Association support the forestry work. The subscription list showed substantial contributions from the pulp and paper industry.

The annual conference of the Quebec Forest Protective Association held on January 23, at the Mount Royal Hotel, Montreal, was well attended, there being a strong representation from the woods departments of the pulp and paper companies. The papers were of an informative character, for the most part, and dealt with protective measures from various angles. Mr. G. C. Piché, chief forester of the Province of Quebec, reviewed the present position in the province. Dr. C. D. Howe, Toronto University, [illegible] protection from the forester's point of view; Mr. R. Kernan, of the Donnacona Paper Company, and Mr. W. Gerard Power, of the Power Lumber Co., from the operator's standpoint and Professor Leacock from the public's. How co-operative protection is carried out in the Western States was described by Mr. E. T. Allen, Western Forestry and Conservation Association. The Association has under consideration submitting a proposal to the Provincial Government for the organization of a trained and uniformed body of permanent forestry police on semi-military lines. The force would be under the provincial government, but administered by a commission of representatives of the pulp and paper and lumber interests. Such a force would act as fire patrols during a portion of the year and during the remainder would be loaned to the pulp and paper and lumber companies. The members would act as a force to enforce strictly the rules for permits and for other measures for the protection of the forests.

The meeting of the Woodland's Section of the Canadian Pulp and Paper Association was a distinct success. The papers were of a more practical character than on many other occasions and the discussion, particularly in relation to the use or decayed and other inferior wood, brought out several points of an informative nature. (See paper by Dr. J. S. Bates, in Pulp and Paper Magazine, Jan 25, 1923.) The paper on Cost Accounting for Logging Operations by Mr. L. W. Campbell, called forth a brisk discussion, and elucidated some phases of this important subject, it being pointed out that 50% of the total cost of operations is spent in camp operations, and that there is plenty of scope for economics in this direction. Mr. Ellwood Wilson is the new chairman and Mr. H. Schanche, of the Abitibi Power and Paper Co., the new vice-chairman.

The Technical Section Meeting

As chairman Bryant expressed it, the program committee of the Technical Section may learn in the course of time, that the first morning's meeting will never permit of the discussion of anything outside the regular business meeting and committee reports. The Section is carrying on so much important work that it always takes a full morning to get the reports in and the discussions complete. As has been the case for the last several years, the educational work being done by the Section was the most prominent feature of the discussion. All of the papers presented allowed a very fine discussion and the result showed the careful preparation made by the program committee in its selection of subjects for the discussion and thorough distribution of the papers before the meeting. The papers read at the meeting are printed elsewhere in this issue and the discussions will follow under the heading of the Technical Section a little later on. Owing to the exhibition of a very interesting moving picture film, showing the use of tractors in woods operations, the excellent paper on **The Testing of Pulp** by Mr. Cameron was read by title only, and the chairman announced that any person having comment to make on this paper, or additional information to present, could do so by communicating with the secretary, and the comment would be published in the Pulp and Paper Magazine with the same status as all discussions at the meeting. This procedure was successfully introduced last year in the discussion of the paper on **Steam Utilization,** by Mr. R. L. Weldon.

The nominating committee proposed the following names for the officers for 1923, and all were unanimously elected. Chairman, O. F. Bryant; vice-chairman, C. N. Gain; Councillors: R. W. Hovey, A. P. Costigane, and C. V. S. Hawkings.

The Smoker

On Thursday night the Woodlands and Technical Sections joined in a Smoker at the Ritz-Carlton. The festivities lasted from 9 o'clock on, and the fun was introduced by the appearance of several members of the K.K.K. who brought forward certain charges of a

most serious nature against several members of the Technical Section. The hooded committee retired for consideration of the punishment that should be meted out to the offenders, but apparently fell in with prohibition officers and failed to return. A number of excellent entertaining features were introduced and it is putting it mildly to say that everybody had a good time.

Incidental to the general meeting, a delightful affair was carried off in the form of a complimentary dinner tendered to Mr. George Carruthers, chairman of the Joint International Committee on vocational education by the fellow members of the educational committee in charge of the preparation of the textbooks. Mr. Carruthers' enthusiastic and self-sacrificing efforts in the behalf of education and other good works, were fittingly described and commemorated. On Thursday evening, the Institute of Industrial and Domestic Arts, which is the organization carrying on the correspondence courses in the Pulp and Paper Making, gathered for supper, a number of people interested particularly in the educational work, and filled in the interval between supper and the Smoker with a discussion of the educational work in the industry.

Business Meeting of the Association

Friday morning was given up to the annual business meeting of the Canadian Pulp and Paper Association. The principal items of business were the discussions of the proposition for establishing a director of research, and an assistant secretary in charge of work relating to the forest. It was considered that the industry, as an Association, was not yet in a position to undertake the character of cooperative research outlined by the committee, although a number of mills are already cooperating among themselves along the lines of their own production. The proposition for establishing an expert forester, in connection with the Association's head office, was likewise laid over for another year. It seems possible however, that, in view of the urgency of the situation regarding the salvage of dead timber now in the woods, the executive may be constrained to take action along the line recommended by the Woodlands Section.

Although the matter was not on the agenda, the proposition was introduced to continue the financial support required by the textbook Committee to complete the work which has already been going on for four years, and is now well on toward completion, the fourth volume of its series being practically finished and the fifth volume very well under way. The meeting readily agreed to an appropriation of $5,000, which is expected to be sufficient to see the work finished, and it is expected that the fifth volume will be in print before the next annual meeting.

Election of Officers

Mr. H. F. E. Kent, who as vice-president of the Association presided over the meeting in the absence of Mr. George M. McKee, who was unable to attend the meeting because of an attack of Grippe, was unanimously elected president for the ensuing year. The nomination of Mr. George Carruthers as vice-president, was received with enthusiasm, and he was elected forthwith.

The other members of the executive of the Association for 1923, are the following chairmen:

Felt Section — W. E. Walker.
Book and Writing Section — H. B. Donovan.
Technical Section — O. F. Bryant.
Woodlands Section — Ellwood Wilson.
Sulphite Pulp Section — Howard Smith.
Kraft Pulp Section — Angus Mclean.
Mechanical Pulp Section — Frank W. Clarke.
Board — D. F. Robertson.
Tissue Paper Section — George Carruthers.
Coated Paper Section — F. H. Gage.
Wrapping Paper Section — F. J. Campbell.
Newsprint Section — J. A. Bothwell.
Waxed Paper Section — E. A. Bradshaw.
Also former presidents, P. B. Wilson and George Chahoon Jr.

The Luncheon and Banquet

A variation of the usual program was tried this year with excellent results. Following the luncheon on Friday, the principal speech of the convention was made by Sir Edmund Walker, president of the Canadian Bank of Commerce. We feel perfectly safe in saying that the Canadian Pulp and Paper Association has never listened to a better address, either as to its form and delivery, or to the thoughtful and helpful contents. Sir Edmund was mildly complimentary and kindly critical as the occasion required. Mr. S. E. Thomason of the Chicago Tribune and the Ontario Paper Company, followed Sir Edmund and the Association and guests were not only entertained by his excellent speech, but considerably amused by occasional bouts with Mr. George Chahoon and others at the head table. The addresses of Sir Edmund and of Mr. Thomason are given in this issue.

MR. EDWARD BECK,
Secretary-Manager, C. P. & P. A.

The man who put the "Bang" in Banquet must have been chairman of the committee on arrangements for the final function of Paper Week. If anyone did not enjoy himself at the annual dinner of the Canadian Pulp and Paper Association on Friday night, it was his own fault. Each guest was furnished with all the necessary implements of amusement, including balloons, whistles, horns and rattles, and the atmosphere of the banquet hall at the Ritz was soon charged with laughter, music (?) and balloons. When the toast to the King had been honored, the formal numbers of the program were over and Professor Stephen Leacock, of who was to have made a speech on Political Economy, assumed the role of master of ceremonies, and officiated most delightfully in introducing the various numbers on the program, which included an excellent variety of dancing and instrumental and vocal music. There were a number of guests present from across the line, and they were unanimously in favor of coming back, whenever opportunity offers, for attending the annual Paper Week in Montreal.

Guests at the annual luncheon of the Canadian Pulp & Paper Association held at the Ritz Carlton Hotel, Montreal, January 26, 1923. At the head table, reading left to right, are: Messrs. P. B. Wilson, F. J. Campbell, George Mead, Sir Edmund Walker, President H. F. E. Kent, S. E. Thomason, I. H. Weldon, Carl Riordon, George Carruthers, J. A. Bothwell, George Chahoon, Jr.

Annual Luncheon of the Canadian Pulp and Paper Association

The Annual Luncheon was held in the Ball Room of the Ritz Carlton Hotel at one o'clock on Friday, January 26th, and was attended by about two hundred guests. Mr. H. F. E. Kent, who was elected president of the Association a few hours before, presided. The guests of honour were Sir Edmund Walker, C.V.O., LL.D., D.C.L., President of the Canadian Bank of Commerce, Toronto, and Mr. S. E. Thomason, Vice President of the American Newspaper Publishers' Association and General Manager, Chicago Tribune, Chicago, Ill. Occupying seats at the head table were Messrs. George Chahoon, Jr., J. A. Bothwell, George Carruthers, Carl Riordon, I. H. Weldon, George Meade, F. J. Campbell, and P. B. Wilson.

Presentation of Loving Cup to Mr. Carl Riordon

At the conclusion of the lunch Mr. Kent announced that Mr. Carruthers desired to address a few words to the company before the formal program was proceeded with.

MR. CARRUTHERS: Mr. Riordon, this is the tenth anniversary of the inauguration of the Canadian Pulp and Paper Association which to-day is proving itself one of the most valuable assets of the Canadian paper industry. You were amongst those who founded the Association and you have always been one of the first to come forward in support of any idea or movement for the im- In view of this fact provement or general advantage of the industry. the officers and entire membership of the Association have assigned to me the pleasant duty and great privilege of asking you to kindly accept this cup as a token of their esteem and of their gratitude because of the keen interest you have always taken in the welfare of the organization.

Mr. Carruthers presented to Mr. Riordon a beautiful silver cup, the gift being accompanied by a hearty demonstration of good will towards Mr. Riordon.

MR. CARRUTHERS: Mr. Riordon may wish to say something but before he does so I shall read the inscription that appears on the cup:

Presented to

CARL RIORDON

by the

CANADIAN PULP & PAPER ASSOCIATION

on the occasion of its

Tenth Annual Meeting, In Deserved Recognition of

His Instrumentality in the Founding

of the Association

(of which he was the First President).

His Constant and Unfailing Interest

In Its Welfare,

And His Untiring and Self sacrificing Efforts

On Behalf of the

Pulp and Paper Industry of Canada

Montreal,
January Twenty sixth
Nineteen Hundred and Twenty-Three

MR. RIORDON: Mr. Chairman and Gentlemen, this has been sprung on me. When Mr. Carruthers asked me to stand up, I stood up eating a piece of cake; I did not know what was coming. I have not had a chance to collect my ideas, but I will say simply that I thank you most sincerely. I do not deserve the credit for the founding of the Association. I was met by a group or committee who came to me and said that there must be an association and that I should stand up and say so and ask the personnel of the industry to rally around me. I welcomed the proposal, the members began coming in and they have kept on coming. It has been a surprise to many of us how the association has succeeded, but its growth is an evidence that it was needed, that it has a right to exist and that it will go on existing. I do not propose to detain you further than to say most sincerely that I thank you.

Messages from Afar

Mr. Kent announced that a cablegram was received by the Association from its former president, Mr. C. Howard Smith, who is now on his way home from a trip to the Orient and who expects to arrive in Montreal about the 25th of February. Mr. Smith cabled his regrets at his inability to be present and his best wishes for a successful annual meeting.

Letters of regret were also received from Mr. W. J. Raybold, president of the American Paper and Pulp Association; from Dr. Hugh P. Baker, the Secretary; from Mr. P. T. Dodge, president of the International Paper Company; and from Mr. Chas. Wilson, president of the Canadian Paper Trade Association; while a long distance telephone message from Ogdensburg, N.Y., also advised of the inability of the late president, Geo. M. McKee, to be present owing to the fact that he was laid up with an attack of the Grippe.

Note: The addresses of Sir Edmund Walker and Mr. S. E. Thomason follow. Other features of the convention will be given in next issue.

Address of Sir Edmund Walker

Mr. Kent, President of the Canadian Pulp and Paper Association introduced Sir Edmund Walker as follows: Gentlemen, the first speaker will be Sir Edmund Walker, President of the Canadian Bank of Commerce, an institution with which he has been associated all of his business life. Having started in at the age of thirteen years, he has been for the greater part of the period since that time a leading Canadian authority on banking and finance. He has kept in touch with the growth of the country and to him much credit is due for discriminating support of railways and industrial concerns. Sir Edmund is not only a banker but a citizen in the broadest and best sense. He is Chairman of the Board of Governors of the University of Toronto, Chairman of the National Art Commission of Canada, President of the Art Museum of Toronto, a member of the Quebec Battlefields Commission and has been identified with many other public movements. Sir Edmund is a noted patron of the fine arts. As an economist, he enjoys much more than national distinction. His counsel is in demand both by our own and foreign governments. What he has to say about business and financial conditions is everywhere regarded as of the greatest importance.

SIR EDMUND WALKER: Mr. Chairman and Gentlemen, I am very conscious indeed of the honor you have conferred upon me in asking me to address this body and to be present at your annual meeting. I am sorry that I was not in attendance at the meetings yesterday and the day before because I learned enough this morning to make me feel a great deal of trepidation in undertaking to address the Canadian Pulp and Paper Association upon any subject in connection with business.

You represent not merely one of the greatest industries of Canada, but one of the greatest in the world. When I consider what the exports of the pulp and paper industry mean to Canada at the present time I wonder what we could possibly do without this industry. As our most serious problem is to find exportable products, sufficient to pay for our imports and the interest on our foreign debt, the value of our paper and pulp sold abroad can easily be understood when we learn that it represents nearly fifteen per cent of our exports of manufactured articles. It is not easy to conceive our international trade position at this moment in our history without this particular form of national wealth, and yet it has multiplied over ten times in ten years. With our after-war conditions, with our enormous debt, with our imports to pay for, with the interest on our foreign debt to be met, it is not easy to imagine what the financial position of Canada would be if we had not among our exports the very great item of pulp and paper.

My mind however—perhaps because of my age—naturally goes back to early days. I took from my library the other day a book written by Dr. Rolph about the West Indies, the United States and Canada, printed in Dundas in 1836, and in that book the author said:

"The paper in this book was made in Hon. Mr. Crook's mills, called the Darnley Mills, and being printed in this Province, the book is altogether Canadian." I can remember when I used to read these lines with a feeling of pride because of the fact that this book was entirely a product of Canada. The mills were established about 1821 or 1822 and this was the beginning of paper making in Upper Canada.

A younger brother of mine—like very many Canadians—went to New York in 1868 to seek his fortune and entered the service of the old paper manufacturers, Jessup & Moore, a great firm in its day. In 1869 or 1870 he had charge of the rag department. The firm bought rags throughout Europe and the further East and I have seen cloth torn from Egyptian mummies and I have picked rare pamphlets from the countless bales of what was a main raw material in paper making. This firm was, however, among the earliest of the manufacturers of paper from chemically prepared pulp, made in their Pennsylvania mills from poplar cut from second growth forests in that state and in West Virginia. I remember quite well the pink sheets of an evening paper in New York so lacking in fibre that you could stick your finger through it as easily as through blotting paper and I recall that paper was made by this firm in Pennsylvania to be shipped by a large sailing vessel created out of a Federal warship, and which, I think Commodore Vanderbilt gave to the United States Government during the Civil War, around Cape Horn to the San Francisco Call. I remember the high price of paper per pound at that time and I know that this paper, by the time it reached San Francisco was five or six times more costly than when it left New York. Since those days there have been many times when neither cotton rags nor paper stock were worth anything or were worth so little that the house wife or business establishment would not save them.

Now, I am going to tell you a trifling thing that may interest you. Banking is a business that uses a great deal, and many different kinds, of paper. The Bank of Commerce is large enough today to have large storage warehouses in Toronto, on the Pacific Coast and one being built in Winnipeg to store paper, forms, books and documents. In keeping the records of banking much paper takes the form of records, which have to be kept for years, but again much is ready for destruction from day to day as its life as an archive expires. In the eastern archives building of my bank in Toronto, which stores material from branch offices east of Lake Superior, we have in eight years converted by our electric machines into first class paper stock, 1,128 bales weighing slightly less than 200 tons and worth in money $7,000. While we have sold this as low as $1.15 per 100 pounds, we, in July, 1920, sold it as high as $3.75 per 100 pounds, so that sometimes it is badly wanted. It may seem to you that this is a very petty affair for the president of a bank to have in his mind or to know anything about, but I am naturally interested in the eternal fitness of things and all saving from waste is pleasing to thoughtful people. This is a lesson in economy that every institution might well bear in mind. We do not waste that paper; we turn it back to its original purpose by electrical power and in that way we are able to pay the entire expense of taking care of these warehouses which we have established.

Economy is a word in everybody's mouth but I fear, too often, people regard it as a word bearing mainly on the question of whether a man or a business is making money or not. If the business we are carrying on is making money we conclude that we are economical. The meaning of economy as I find it in the dictionary is:

"A frugal and judicious use of money; that management which expends money to advantage and incurs no waste; a prudent management of all the means by which property is saved or accumulated" etc.

A condition under which the junk dealer, that emblem of saving in every community, is not wanted, because it is easier to cut down a tree that has taken fifty years to grow and make it into paper than collect and make use of paper stock or cotton rags, is certainly not economy for the nation whatever it may be for the individual.

I fear that our object as individuals and as a nation, is not often economy; not often even exchanging what we have made for money, but exchanging a product of nature in whose creation we had no part, but to which we have added some labor, for money. While that at times may be regarded as economy it too often is a most ruthless disregard of economy.

We all have that paternal regard for our children which causes us to desire to save money, to lay up bonds and securities and to accumulate real property for their benefit. But while doing that we deliberately destroy that world—not merely its beauty but its material necessities—that our children are destined to live in and we do not seem to realise how much more effectively we could give expression to our feelings of paternal regard by helping to conserve the natural wealth upon which those who come after us must rely.

I would not venture to offer a hint on this great subject that underlies your business—that is the condition of your forests—after what I have heard today. Although I must confess I felt a chill at your unwillingness at the moment to spend money on research, I well understand how very deeply interested you are in research of all kinds. When one looks to a country like Japan where the most beautiful and strongest paper in the world is made, when one considers the attractiveness they can give to the wrapping paper used to put around goods, when one considers that they make the daily newspaper out of the worst rubbish they have, and when one considers what goes on upon the North American continent, is not one justified in saying that we are not proceeding upon right lines in the practice of national economy. I am perfectly sure from what I heard—and despite what I heard this morning—that you are tremendously interested in the continuance of such a great business as that of the pulp and paper industry, that you are considering from day to day and year to year the fundamental questions of the permanence of your source of supply and that you are not more concerned about the engineering and the chemical than you are about the biological end of it. I am quite sure that you have in your mind the great question of how this industry is to be made prosperous and permanent and therefore it is not necessary for me—an ignorant person—to read you any lecture about it.

I sympathise deeply with the difficulties in harmonising the interests of the paper and lumber manufacturers and I deplore the delay in creating the National Research Institute. I am sorry that at Ottawa where my friend Professor McCallum has been doing such very good work, the Government has done nothing yet about this national bureau of research. Whether this is the thing needed for your particular purpose or not I do not know but it is a thing tremendously needed for Canada having regard, in many respects, to her resources. I hope the new Government will take an interest in this question and do something leading towards the end in view. It does not necessarily mean that we shall have at Ottawa something like the Mellon Institute; it may only mean that we shall have an institution that can correlate and make available the work of the different universities and laboratories in Canada. Personally I had something to do with the first laboratory established in any manufacturing institution in Canada. I have no respect for the manufacturer who does not want to know the fundamental things about his own business. Nothing pleased me more or made me more desirous of coming here today than to learn about the educational work you are doing in connection with forestry and paper making. We have with us now, we have always had with us, the type of business man who calls himself a practical person and likes to judge of the results of his business merely by the balance sheet and the profit and loss account. He is one of the most dangerous men we have in business—a man who has no more judgment than to appraise the condition of his business merely upon what the results are from day to day and from year to year. It is not possible for any man to know too much about his business or to have too great a respect for the fundamentals or for the tiniest variation in the different processes of which his business consists, and it is a great thing to have an established body such as this which will constantly test whether the basis is sound or not. When you think there is nothing more to learn you had better retire. I have been a banker now for over sixty years; when I think I can learn nothing more about banking, I hope some one will put me away. I have learned a few things since and during the war.

A writer once said, regarding a certain piece of music, that it was not so much like a kaleidoscope as a broken kaleidoscope. Many businesses are less like a kaleidoscope than a broken kaleidoscope. I do not know whether there was any intention on the part of some of the speakers, this morning, to regard their own particular knowledge as one of those old-fashioned secrets which they would rather keep for themselves and not pass on. I have sometimes annoyed some of my associates by saying that if I knew anything new about banking I would gladly pass it on to any banker not only in Canada but on the continent in order that the whole might be benefited.

It is my duty as a banker to study industrial conditions but when I recently saw in the Journal of Commerce the illustration of a modern paper machine, of which two have been made for the Laurentide Paper Company by the Dominion Engineering Works of Montreal, of which the wire is 166 inches wide and the length 103 feet, I realised that the complicated nature of the machinery was worse than Greek to me. I am not surprised to be told that it holds the world record for speed; indeed, I should not be surprised at anything that might be said about such an uncanny monster. Surprise at its scale and vast power to make paper lessens, however, when one looks at the amazing illustration on the cover of the same journal in May

1919 of a river full of logs for pulp on the Tobique in New Brunswick. Where do they come from? How are they to be reproduced again? How much more went up in smoke? How much still more have the bud worm, the beetle and the borer destroyed? That is very fundamental. I do not know enough about it to speak with authority upon it, but I hope the meetings of this Association will never concern themselves more about chemistry, engineering and cheapness of production than about the question of where the raw material is to come from in the years before us.

Your business has made almost the most wonderful of the recoveries in Canada but I suppose your recovery is a reflection of the prosperity of the United States to a much greater degree than of the moderate improvement in Canada which, for many reasons, seems slower than in the United States.

As I had occasion to say recently, it may be possible for a nation of 110 millions possessing most of the materials necessary for their national well-being, and now one of the two largest creditors of the rest of the world, to prosper while Europe starves, but the basis of our prosperity in Canada rests on the recovery of Europe and on several other things.

I am going to speak about that for a minute. It is impossible to say anything new on this subject. The vicious circle has been going around year after year and its aspect only changes as some new idea comes up now and again. The budgets of the nations of Europe must balance before the printing presses are stopped from increasing the flood of fiat money. The printing press goes on for two purposes, first, to fill the anticipated deficit in the budget, and second, to meet the enormous extent to which the actual expenditure under the budget is made larger by the fact of the printing presses continuing to turn out worthless paper. The budgets cannot be balanced until standing armies are lessened, and the standing armies cannot be lessened until German reparations are settled. Budgets also will not be balanced until the allied debts to Great Britain or the United States are scaled down or cancelled. This will not happen until Great Britain has settled with the United States. If it is left to a few of the wise men in the United States cabinet and such envoys as England sends to this continent it might be accomplished, but if it has to go back to the Senate of the United States——

A VOICE: Good night.

SIR EDMUND WALKER: I was not going to utter a modern note like that, but I was going to ask: "How long, O Lord, how long" shall we have to wait?

Even if through reparations and debt settlements Europe recovers her purchasing power there is a good deal left for us to do and it must be done either before or after that recovery or both before and after. The cost of production of everything in North America must be lessened. That must mean lower freights and lower freights again will only come by lower labor. Conditions in the United States are the same in that respect. We have chosen, because we were troubled as to eugenics, racial conditions and many other things, and because of the pressure on behalf of labor, to put the bars up against immigrabe particular about the character of the individual may be forced to forget our racial desires. We should who come into North America but we never have been very particular about their race so long as they were what we call "white men." Our industries are tion. We ought not to forget our eugenics but we founded upon an unbroken stream of unskilled labor. We must produce cheaper and we must produce more. Nobody likes to discuss the lowering of wages but wages are the insuperable bar to the adjustment of things in North America and some one ought to have the courage to say it. I say it here because I would say it if I were speaking to the labor men themselves. I would say it because we will have much worse to face if we cannot adjust the cost of our production and because I believe this is one of the inevitable things if we seek to bring the whole scale of living and of costs back to wholesome conditions. If the laboring men want rents or the other conditions of life to get back to a wholesome condition, if they want to be assured of steady labor, if they want an assured wage basis, if we are to enter upon a new lease of comfortable life, we can only do that by an adjustment which involves a lessening of the cost of labor on the one hand and of everything that labor has to buy on the other. If it were possible to make the average labor man understand that life is measured by the comforts he gets out of the money he earns and not measured in dollars we would be a long way ahead in the direction towards which we are looking.

If the scale of the cost of production is wrong it is equally true that the scale of living and of hours devoted to industry is wrong. We cannot pretend that we did not know that because of war debts, we must for a generation or more, work harder for longer hours, and with more intense application, not only because of the vast debts but because we have lost the labor of those splendid sons of ours who fell in order that we should live, and in order that we might have the right to go on and work. Have we done any of these things? Can we pretend that we have ever faced the conditions that we knew perfectly well, even during the war years, we should have to face? We have done, I think, precisely the reverse. Do we not demand more time for what we are pleased to call recreation than ever before? Did we not know that in addition to harder work we must spend less of our earnings on things not actually necessary? We have never had in the history of the world such an expenditure of money by those people who have never before had very much of a margin, but who now, that they find their margin enlarging, spend it at once. I mean the many people who do not save, who are not provident, but who spend money on every kind of indulgence, who never had so much to spend, who never spent so recklessly, who never worked so little, and who never demanded so much recreation. On the few who pay income taxes the obligation of economy has been enforced but the majority of our people spend money much more freely than ever before. What is true of us as individuals is true of our governments, municipal, provincial and federal. We seem to think that the test as to whether we should spend money on public works is our power to sell bonds. Unfortunately, that is too easy and I really think we are nearing the day when we shall realise that nature provides a limit for all unwise actions.

If we can correct these things, if we can get back to where we thought we would be by this time, although life may seem rather dull and the road may be uphill, I should like that condition far better than any fortuitous prosperity we may have at the present time and I am sure that we would enjoy the kind of strenuous life with its slow, but sure, prosperity, better than anything we have enjoyed since the dark days of the autumn of 1914.

Address of Mr. S. E. Thomason

MR KENT. I am sure we are greatly indebted to Sir Edmund Walker for his very fine address and that we shall carry away with us a great many of the ideas that he has presented to us. If we do we will help him to make this world a safer and a better place. I am quite sure that if we had heard this speech, Col. Jones would have got his budget through.

Our next speaker is Mr. Thomason who comes from Chicago. Mr. Thomason is Vice-President of the American Newspaper Publishers' Association, which comprises all of the American daily newspapers of any importance. He also is the Business Manager of the Chicago Tribune which ungrudgingly admits that it is the "world's greatest newspaper." Evidently in Chicago they have not heard of the Montreal "Axe." The Chicago Tribune as most of us know, owns the Ontario Paper Company and derives its newsprint from this country; quite a lot of this, too, since the Ontario Company turns out 90,000 tons a year, and at that is unable to keep up with the Tribune's requirements. The Tribune is also engaged in the erection of the world's greatest newspaper building, designed after a world-wide competition in which a quarter of a million dollars was given for the best design. When completed the edifice for architectural magnificence will rank among the world's most noted buildings.

In addition to being a publisher and a paper maker, Mr. Thomason is also a lawyer, having completed the law course in the University of Michigan and later in the Northwestern Law School of Chicago.

As a publisher he has served in the A. N. P. A. as Chairman of the Committee on Laws, Chairman of the Paper Committee and Chairman of the Postal Committee, in all of which positions he has rendered the newspaper industry signal service. He also presents the anomaly, for a publisher, of being able to see the paper manufacturer's side of an argument as well as that of the publisher's. For that the Canadian paper manufacturers owe him a debt of gratitude. Mr. Thomason is also reported to be a crack golfer and an expert at deck tennis whatever that may be. With all these accomplishments Mr. Thomason has a wide choice of subjects upon which to address us, but whatever he says, we may be sure, will be well worth listening to.

MR. THOMASON: Mr. President and Gentlemen of the Canadian Pulp and Paper Association, I confess myself wholly at a loss for words with which to acknowledge the kindly introduction of your President. After all, the art of after-luncheon speaking is not a Middle Western one, but having so thoroughly enjoyed your hospitality, I find the task not so difficult as it might otherwise be. I have enjoyed your cock tail that was not synthetic, I have enjoyed your wine that was not surreptitious, I have enjoyed your most excellent luncheon, your amiable and pleasant companionship, the agreeable conversation of gentlemen in this room, but notwithstanding all these delightful things and the friendly atmosphere in which I find myself, I am still at a loss for words with which to express myself. We, from the Middle West, are not flamboyant in describing the magnitude or expressing the locale of our enterprises. When his eldest son was setting out upon his travels in 1820, he said to his father, John Randolph: "Father, how shall I know where people are from." "My son," said Randolph, "never ask; if they are from Virginia they will tell you; if they are not, they will be ashamed." This is not the attitude of people from the Middle West and the representatives of the blatant sheets for whom I have the honor to speak are particularly modest about the country of their origin. My own paper is especially notorious for its modesty in extelling its own virtues. I have been embarrassed by the efforts of the gentlemen in the publishing fraternity from New York, Buffalo and Washington who sit over here at my right and who endeavored to comfort me for several hours this morning with stories of the exploits of American newspaper men who have enjoyed your hospitality. They have told me of one in particular who succumbed at one of your banquets, to the munificence of your provision for his entertainment and slipped quietly under the only to arise when his name was called by the Chairman and who responded with fluent, polished and elegant expressions of friendship and esteem. I may say in explanation of my embarrassment that these gentlemen from the South have come here today to enjoy a Roman holiday at my expense.

Mr. Beck set my subject when he invited me here to-day; that was The Mutual Dependency of the Paper Manufacturer and the Newspaper Publisher. I think that Mr. Beck felt that as the representative of a newspaper which manufactures its own newsprint, I had experienced the pains of dependency in both relations. He felt that I must necessarily have been both the bride at the wedding and the corpse at the funeral and I think he was right. I think seriously that if all the American publishers could have experienced the tribulations of the paper manufacturer in the past five years, — governmental restrictions on raw material, power, cut and production, labor shortages, difficulties with high water and low water, run-away markets and fires — they would have approached our mutual problems with a sound understanding and in a more charitable spirit; and I believe that if you as newsprint manufacturers could have experienced all the difficulties of the newspaper publisher, his difficulty of inordinate advertising lineage demands in the face of soaring newsprint prices, his difficulties with quadrupled postal costs, his labor difficulties, his difficulties with governmental restrictions, not always exercised with the utmost intelligence — you would have approached our mutual problems with greater understanding and with more charity for our shortcomings as publishers.

Newsprint plays a very large part in the expense of the publisher. As you know, the success or failure of the average publisher depends almost entirely upon an easy supply of newsprint at a suitable price, in suitable quantity and of suitable quality. We spend in the publishing fraternity many hours of effort in endeavoring to lower our labor costs but after all our labor costs for all of our labor are less than half of our total newsprint costs. We spend hours of effort in our study of the problem of cheap feature services, of adequate picture services and of adequate foreign and local news services and yet our entire expense for all of these items is probably not ten per cent. of our total expense for white paper. So that, the success or failure of the larger newspaper, and of the small newspaper, its prosperity, its life, depends upon adequate supplies of newsprint at suitable prices.

Consciously or unconsciously — and I suppose most newspaper publishers would only acknowledge it if they were unconscious — we of the newspaper publishing fraternity depend on you to supply our fundamental raw material at low costs. We depend upon you for foresight in the industry and for the investment necessary to produce our newsprint at prices that will enable us to endure. We depend upon you to guard your forests from the air and from the land so that they shall not be destroyed by fire. We depend upon you to renew your provisions for wood when your pulpwood reserves are depleted. We depend upon you to harness your rivers to produce the power necessary to grind your wood into pulp and to convert your pulp into paper and we depend upon you for the investment necessary to provide the raw maetrials, the stores, the power necessary to produce newsprint paper at low costs. So well do you discharge there responsibilities, so adequately do you perform the duties which we depend upon you to perform that we are enormously conscious of our dependency and we look only to the question of the price. You could almost get a laugh out of that; you could almost get a laugh out of my speech if your sense of humor were not inverted and turned upon your own situation because after all you depend upon us. I think it is fair to assume that the average newspaper publisher will not order more paper from you consistently day in and day out, year in and year out, than his needs require. You can depend upon him to so conduct his business that his needs will be maintained and, in all likelihood, increased. Therefore, you depend upon him. You depend upon us as newspaper men to so dress our product, to so exhibit our goods, that the public demand will be maintained, that the circulation will be maintained or increased because only through that means can the demand for your product be increased. You depend upon us to so market our papers as advertising mediums that demand for advertising space will be maintained and increased; you depend upon us to so cooperate with the advertiser that advertising will prove to him to be an active agent for the promotion of his sales; you depend upon us to so distinguish between the meritorious and the meretricious product that public confidence in advertised products will be maintained. For all of these reasons you depend upon us as newspaper publishers to maintain, and possibly increase, the demand for your product.

I suppose in no industry — at least in few industries — does the raw material play so large a part in the ultimate finished product as newsprint does in the ultimate products of the newspapers. In very few industries, if in any, does the cost of the raw material play so large a part in the final cost of the product as newsprint does in the final cost of the newspaper. I believe that both of us, however, are coming to a somewhat belated realisation of the nature of our relationship. I believe we have made a start in coming to a mutual understanding of each other. We, on our part, in the American Newspaper Publishers' Association, have established committees to look into our mutual and common question of standardisation, our common problem of reforestation and fire prevention and you, on your part, have established a committee to look into the question of the extension of and the appreciation of the value of. advertising. In any event, we have given up the idea of trying to put each other in jail and within the past year we witnessed the rather unusual spectacle of price reductions in contract periods with firming markets on your part, and consents to price increases in contract periods on ours.

I do not believe that I am unveiling any new or startling principles to you gentlemen in saying what I have to, and I do not think there is any harm in affirming what we both know. I believe that guests, in dealing with practical questions, are supposed to pass over the question of newsprint prices. I am entirely aware that a tactful guest will not mention those subjects which, on any theory, might be embarrassing to his host. I wonder why we cannot work out a system which will divide our profits evenly in the first place as they are ultimately divided. You remember that four years ago the demands for advertising sent the demand for newsprint skyhigh. Very quickly newsprint prices soared. They went to $240, $250, and $260 a ton for spot paper. When they reached this limit the prices suddenly deflated just as rapidly as they had inflated.

I wonder if we are not both a little stupid and insane in permitting the operation of an unrestricted and drastic economic law to fix our prices for us. Here we are with the most even basic demand of any industry. Your statisticians have shown that newspaper advertising rates increase more slowly than any other prices in good times and that they decrease more slowly in bad times. The same is true of newspaper circulation. In this day and age news is as essential to humanity as food. We have a basic industry, the demand for which is almost unchanging and yet we leave the adjustment of our respective shares of the profits of this industry — yours and ours — to the operation of this drastic, economic law, unrestricted.

What can we do about it? I do not believe there is any panacea, any quick remedy for this situation. I think there is only one slow working remedy and that is the remedy of our mutual education in our dependency on each other. I believe we are coming to the point where we realise that the permanent prosperity of your industry is dependent upon the permanent prosperity of ours and that the lasting stability of your industry depends on the lasting stability of ours.

You remember that Charles Lamb once said: "I hate that man." His friend said to him: "You cannot hate that man; you do not know him."

"Yes," replied Lamb, "but if I knew him I could not hate him."

I think that is our situation. I believe we are coming to know each other and that we are coming to realise our mutual dependency.

You remember that about a year ago you appointed a committee to look into the question of the extension of newspaper advertising and that your committee waited on a committee of the A. N. P. A. advertising bureau, and tendered to that committee its moral and financial support, offering a large sum of money to assist it in carrying out its work. But, the history of the past not having been such as to make us of the publishing fraternity trust the Greeks bearing gifts, we declined your kind offer with thanks. I think we made a mistake in doing that and I am speaking only for myself in saying so. But personally I believe that effort marked a step forward in our education upon the subject of mutual dependency. I believe the time is going to come when your Association and ours are going to work hand in hand on our mutual problems. I believe the time is coming when you are going to stop selling newsprint to us at prices which possibly in your judgment may prove ruinous to certain of our members and that we on our part are going to stop at-

(Continued on page 154.)

Technical Section Papers*

The Properties of Wood in Paper Making

The Effect of Physical and Chemical Properties of the Wood on Economy and Quality, Particularly in the Sulphite Process

By BJARNE JOHNSEN and H. N. LEE

The suitability of any kind of wood for paper making is determined by its physical and chemical characteristics. Very resinous woods, like the pines, are not suitable for the sulphite process, but make an excellent raw material for the sulphate or Kraft process. Soda pulp from poplar is used in certain papers such as book papers on account of the short, bulky fibre but can not be used for papers where strength is required. It is not the intention of this paper to discuss the value of the various species of wood for all different pulping processes and for the different grades of paper. This discussion will deal chiefly with the most important pulpwoods, spruce and balsam, and their use in the sulphite process, which is by far the most important chemical process. However, much of the data given may be equally well applied to other woods and the other processes.

In discussing the properties of wood for paper making there are two chief considerations, economy and quality. Wood is ordinarily purchased on the cord basis and the consumption of wood is recorded on the cord basis. It is customary to express the yield of pulp in terms of cords used per ton of pulp, but while the enormous variations in this figure in different mills may, to a great extent, be accounted for in the different methods used in the manufacturing process, it is not possible to so explain the great variations which are experienced in any one mill. These variations can be explained only when the actual value of the cord based on the physical and chemical properties of the wood are known.

Measurement of Cord Wood

Considering first the physical properties, it is known that a very large variation can exist in the amount of solid wood in the cord. According to Sterns (1), the theoretical solid content of the cord is (1) always the same provided the logs are all of the same diameter. In this case the theoretical solid content is 90.69 per cent (116.1 cu. ft.). (2) If the logs differ in diameter the solid content will be greater and will increase as the ratio of the largest diameter to the smallest increases. However, in actual measurements he found no cords contained over 80 percent (102.4 cu. ft.) solid wood.

Cubic Feet per Cord

Length	Graves: Over 5.5 in. dia at small end.	Graves: 2 to 5.5 inch dia. at small end.	Winslow and Thalen: Mixed	Winslow and Thalen: Straight	Winslow and Thalen: Crooked	Winslow and Thalen: Knotty
30 inch	90.5	83.9	87.2	..	..	..
4 feet	88.9	82.4	85.7	92	82	74
8 feet	83.8	77.2	80.5	82	75	50

Graves (2) and Winslow and Thalen (3) give the figures in the first column.

Sterns (1) found the average solid volume per cord of 32 inch wood, based on careful volumetric measurement of 34 cords, logs from 4 inch to 16 inch diameter to be, before barking 93.97 cu. ft., after barking 83.36 cu. ft.

Our own measurements on two very different kinds of wood, one coming from northeastern Quebec and the other from Minnesota, based on 32 cords of each class of wood, show the following:

	Average		Maximum		Minimum	
	Que.	Minn.	Que.	Minn.	Que.	Minn.
Number of logs, per cord	67	115	102	156	36	86
Average diameter inches, per cord	7.31	5.67	10.56	6.50	5.96	4.95
Cubic feet solid material per cord	88.58	85.68	99.52	91.72	69.79	77.82

The Quebec wood was peeled, the Minnesota wood not peeled; therefore the actual wood in the latter was about 12.5 per cent less or an average of about 75 cu. ft. per cord. The greatest variation in the amount of solid wood was due to poor packing which in turn was frequently due to crooked or poorly trimmed logs. The figures appear to show conclusively that wood of larger average diameter, which means a mixture of small, medium and large diameters, results in more actual solid wood per cord than wood of small average diameter.

In most cases investigators have found that the larger the average diameter the greater the solid content, but Sterns found just the reverse. He believes the discrepancy may be explained by the fact that he measured 32 inch wood while the others, in general, measured 4 foot or 8 foot wood. It is certainly true that the effect of crookedness of logs is greater in long logs than in short ones and it is possible that in very short logs the effect of crookedness might be comparatively small. Moreover, large diameter logs are more likely to be straight than are those of small diameter.

It has been shown in the foregoing that the actual value of a cord of wood for production of pulp, or in other words the solid wood in a cord, may be influenced by several factors and may vary very considerably. To secure reliable figures from which to determine yield, as well as to handle the purchase of wood in the most efficient manner, it is quite apparent that accurate measurement of the wood is necessary.

Density and Rate of Growth

The value of a given volume of solid wood for pulp is determined by the dry weight of the wood. This is dependent on the density of the wood. This varies, not only with the species but also within the same species according to the conditions of growth.

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* The following papers were read at the annual meeting of the Technical Section of the Canadian Pulp & Paper Association, Montreal, Jan. 24-25, 1923.

Our investigations show in balsam as well as in spruce, and the same may probably be applied to other coniferous woods, that slow growth wood is more dense than rapid growth wood. The following are figures for logs 6 inches in diameter:

	Rings per Inch.	Weight cubic foot Green wood when absolutely dried.
Quebec Spruce	18.5	27.6
	4.5	20.2
Minnesota Spruce	17.4	28.0
	5.7	22.4
Quebec Balsam	19.7	27.2
	4.3	18.7
Minnesota Balsam	10.3	22.6
	6.4	17.8

Moreover, as is shown in the following table by Kress, Wells and Edwards (4), there is considerable variation in the average density of different species of wood.

	Ave. weight of 1 cu. ft. of Green wood when dried.
Black Spruce (Picea mariana)	23
White Spruce (Picea canadensis)	24
Balsam fir (Abies balsamea)	21
Hemlock (Tsuga canadensis)	24
Jack pine (Pinus divaricata)	24
Aspen (Populus tremuloides)	23

Our own tests show:

	Ave. Wght. of 1 cu. ft. of Green wood when dried.	Ave. Rings per in.
N. E. Quebec spruce	25.2	12.8
S. W. Ontario spruce	25.6	11.5
N. E. Quebec balsam	20.8	9.1
S. W. Ontario balsam	20.4	8.2

From this data it is apparent that spruce has, on the average, 15 to 20 percent greater density than balsam fir. Here again, as in the case of cord wood measure, are opportunities for large variations in the possible yields from cords of wood composed of more than one species or even composed of the same species of different rates of growths.

Chemical Composition (Cellulose Content)

Another factor which influences the possible yield, even when the foregoing factors are eliminated, is the chemical composition of the wood. The most important characteristic is the cellulose content. The data on this subject from different sources are not always comparable because the various investigators have not used the same methods in making their determinations. The relative cellulose content of certain kinds of wood, based on a comparatively small number of tests is given by Johnsen and Hovey (5).

Cellulose calculated as percent of oven dry wood:

White spruce	56.48
Black spruce	50.64
Red spruce	52.95
Balsam fir	51.60
Jack pine	49.24
Hemlock	48.70
Aspen	57.25

Even within the same species it has been shown that the cellulose content varies. Johnsen and Hovey (5) found in balsam fir that rapid growth (low density) wood contained 50.35 percent cellulose while slow growth (high density) wood contained 52.85 percent cellulose. Thorbjornson (6) gives the following figures for Swedish spruce, determined from different parts of the same log.

Specific Gravity	Percent Cellulose
.382	53.4
.425	57.3
.446	58.5

As far as the two most important pulpwoods, spruce and balsam fir, are concerned it is safe to say that spruce has a slightly higher cellulose content than balsam fir. According to this data the yield which may be expected from a given volume of solid wood will be greater with woods of high density for two reasons, (1) the greater actual weight of wood substance, (2) the somewhat greater cellulose content by weight.

Decay

The influence of the cellulose content on yield is much more marked when wood of different degrees of soundness are compared. It has been found by Acree (7) that the cellulose content may be decreased by as much as 28 percent. Similar results have been obtained by J. L. Parsons (8) (unpublished data). While in general decay decreases the cellulose content, Parsons found that decay caused by **Trametes pini Brot.** resulted in an increase in cellulose content of 15 percent with a decrease in lignin of 30 percent.

Another serious result of decay is a decrease in the density of the wood. Sutermeister (9) found spruce wood which was thoroughly affected by rot but which was still quite hard and firm weighed less than 18 lbs. per cubic foot of dry wood while sound spruce weighed more than 22 lbs.

Relation to the Manufacturing Process

So far factors which have a bearing upon the value of the cord, particularly with regard to economy, have been considered. In the following the importance which knowledge of these factors and other factors have in the manufacturing process and on the final product will be discussed.

It is obvious that the variations in the solid content of the cord, due to the conditions of piling of wood, dimensions of logs, crookedness, and trimming, have a very great effect on the cost of production. However, these variations are eliminated as soon as the wood is in form of chips and therefore do not directly effect the capacity of the mill or the quality of the product.

Knowledge of the density of the wood is of much greater importance because it directly affects the yield and, as a result, the economy in several ways.

(1) Dense wood gives a greater weight of wood per cord.

(2) Dense wood gives a slightly higher cellulose content per unit of weight.

(3) Dense wood, consequently, increases the digester capacity which allows (a) a longer cooking time at lower temperature which results in (b) increased yield and a better quality of product.

These points are illustrated by the results obtained by experimental cooks on a semi-commercial scale as follows:

	Balsam	Spruce
Wt. of absolutely dry chips from cord of peeled wood, pounds	2036	2580
Wt. of chips in digester, absolutely dry, pounds	268	323
Bleach consumption—percent	17.2	15.5
Yield of bleached pulp, percent dry wood used	42.79	43.65
Yield bleached pulp for equal volume digester charges, pounds	115	141
Absolutely dry pulp per cord peeled wood, pounds	871	1126

Actual mill data, using two different classes of wood (average figures per month), show the following:—

	Month A	Month B
Wt. cu. ft. wet chips when absolu-tely dried — pounds	8.15	8.64
Absolutely dry pulp, per cu. ft. digester space — pounds	3.56	3.91
Yield absolutely dry pulp, percent of dry wood	43.7	45.2
Screenings (dry) percent of total pulp	3.00	2.03
Cooking time — hours	12	12.5
Bleach consumption, percent	12.7	12.0
Slowness of unbleached pulp	31.0	27.1
Strength of unbleached pulp	92	93

These experimental and mill data show how the density of the wood affects the value of a cord and the capacity of the cooking equipment.

Another factor which affects the digester capacity is the moisture content of the chips. The higher the moisture content of the chips the heavier the chips will be and consequently the better will the chips pack in the digester. Thorbjornson (6) has shown that by using chips with an average moisture content of about 20% in place of chips with a moisture content of about 40% the capacity of the digester is reduced 9.5%.

It has already been stated that the variation in cellulose content with sound wood is not great but when rotten wood is used the cellulose content becomes a very important factor. The yield by weight, based on a number of experimental cooks, with the soda process, is shown by Sutermeister (10) to be about 30% for rotten poplar wood as compared with about 41% for sound poplar. For birch an even greater reduction in yield was found. Sutermeister (9) using the sulphite process with spruce wood shows that the yield by weight is higher with rotten wood than with sound wood, but his conclusions do not seem entirely justified when it is considered that the two resulting pulps were not cooked down to any where near the same degree of purity; the sound wood yielding a pulp with only 0.6 percent screenings and requiring only 17% bleach while the pulp resulting from the rotten wood had 6.6% screenings and required over 30% bleach. There is no reason to believe that decayed wood should give a higher yield by weight than sound wood, except in cases where the fungus has caused an increase in the cellulose content, as referred to in the case of **Trametes pini Brot.** mentioned previously. This shows how necessary it is in investigations of this kind to specify the kind of fungus which has caused the decay of the wood, and also to compare resulting pulps on the basis of the same degree of purity. All of our experimental and mill data have shown a decided decrease in yield by weight when rotten wood is used. Also Bates (11) found a reduction in yield by weight in large scale experiments.

Large mechanical losses will occur if wood is decayed. Kress (12) gives the following figures for loss in chipping:

	% loss in Screening 5/8" Chips
Nearly sound white Spruce	5.62
Infected white Spruce.	13.22
Infected white Spruce	15.60
Badly rotted white Spruce	17.02

If wood is decayed, and especially if it is saprotten, a considerable loss also occurs in barking.

The effect of decayed wood upon the quality of the pulp is not clearly evident in Sutermeister's and Bates' reports. According to Bates (11) there is no reduction in the strength of the pulp but his tests were made on unbeaten pulp and the difference would hardly show up at this stage, particularly when the wood is only partially decayed. Sutermeister (9) found a decided decrease in strength of pulp in the case of the rotten wood cooked by the sulphite process. With the soda process he found an increase in the strength of pulp from partly decayed birch wood, after beating in pebble mill, while he found it impossible to make sheets of beaten soda pulp obtained from very rotten wood. Our own tests show that decayed wood has a decided influence on the beating quality as well as on the strength of the resulting pulp. Pulp obtained from rotten wood hydrates more rapidly when beaten, and with the hydration the strength increases. However, the maximum strength of the pulp is reached at an earlier stage in the beating process after which point the strength decreases rapidly.

Such has been found to be the case, not only in experimental tests, but also in ordinary mill experience. Monthly figures from mill operation show that when a large percentage of wood was used which had been stored for two or three years, and therefore was more or less affected by fungus, the strength of the pulp was considerably lower and the slowness considerably higher than when comparatively new, sound wood which came from the same locality was used. This was the case in spite of the fact that the cooking process was adjusted so as to protect the fiber of the more or less decayed wood as much as possible.

The deleterious effect of decayed wood used in the ground-wood process has been thoroughly investigated and described by Kress, Humphrey and Richards, (13) and Bates (14).

Seasoning

With a raw material which may be stored for a long period before it is used in the manufacturing process, it is of interest to know what effect seasoning has upon its value. It is evident that if wood is stored so that it will deteriorate from decay its value will gradually decrease. If, however, wood is stored under proper conditions, unfavorable for the growth of fungi and so that the wood may dry out, its value for pulp will increase. As Schwalbe (15) has stated green wood, because it is less resistant to the cooking process, gives a lower yield than seasoned wood, but he has found it possible to materially increase the yield from green wood by giving it a milder treatment. It has also been found in mill operation that seasoned wood gives a higher yield and a stronger fiber than green wood. During the period of storage the moisture content of the wood decreases which is an advantage since the moisture in the chips results in a direct dilution of the cooking liquor. However, if the wood is too dry the penetration of the acid is much slower and more time is required to bring the digester up to the desired temperature and pressure, necessitating either a longer total cooking time or a higher temperature. Schwalbe (15) found that the penetration period of very dry wood could be materially decreased by pretreating the chips with steam or with waste liquor.

Another objection to the use of green wood is the difficulty which is experienced in the manufacturing process due to pitch. It is generally known that the troublesome pitch forming substances in the wood decrease during storage.

In the following diagram are shown the principal factors which influence the consumption of wood per ton of pulp or the yield of pulp per cord. The most important of these factors, density and soundness, are also the factors which influence the quality the most. In most cases the low density wood and the infected wood are cooked in mixture with sound wood of high density and the cooking process is adjusted to the sound wood. All the undesirable effects of low density wood and decayed wood are therefore experienced; low yield, low strength, and high slowness. If, however, the wood could be sorted according to its qualities, soundness, density, seasoning, etc., it would be possible to adjust the cooking process to some extent for the various grades. In order to maintain the production of the mill with low density wood and with decayed wood it is necessary to shorten the cooking time by using a higher temperature. But especially with this kind of wood high temperatures should be avoided.

It is, in many cases, possible to do so by shortening the penetration period of the cooking process, because wood of low density and decayed wood are more rapidly penetrated by the acid. A few experiments were made in order to determine how the penetration is affected by these factors. The results, which were obtained by placing discs of wood in a small digester with cooking acid of 6.18% total SO_2 and 1.03% combined SO_2, and bringing the temperature gradually up to 100 deg. C. in 2½ hours, keeping the temperature at this point for ½ hour, give an indication of the comparative penetrability.

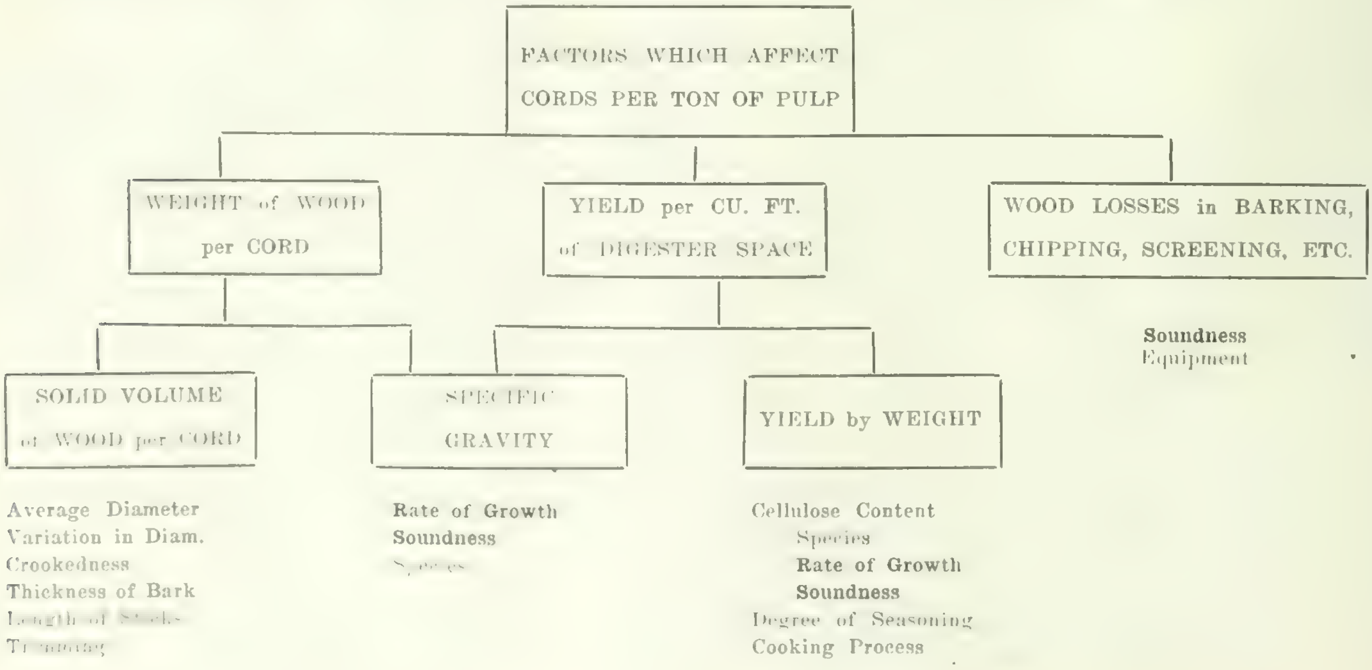
Penetration Ratio Based on Slow Growth Spruce Equal to 100

	Rings per Inch	Wt. per Cu. Ft.	Penetration Ratio
Slow Spruce	28	28.6	100
Rapid Spruce..	9	23.2	180
Slow Balsam..	38	22.2	215
Rapid Balsam	7	18.6	350
Spruce partly decayed.. **Lenzites sepiaria**	..	22.0	900
Spruce badly decayed.. **Trametes pini**	..	14.0	1500

The question of proper methods of storing pulpwood has often been discussed. It will only be mentioned here that best seasoning conditions allowing a minimum amount of decay are secured when logs are peeled or barked and then stored in such a way that good circulation of air is always maintained throughout the piles.

It has been attempted in this discussion to point out some of the important factors which influence the economy and quality in the production of pulp and paper from wood, with the object of drawing more attention to this most important raw material. It is hoped that the pointing out of the factors which so greatly influence yield and quality will result in the establishment of methods of measuring and testing wood which will be of great value in the intelligent purchase and handling of wood and which will explain variations in yield and quality that, up to the present time, have not been fully accounted for.

(For references, see page 135)



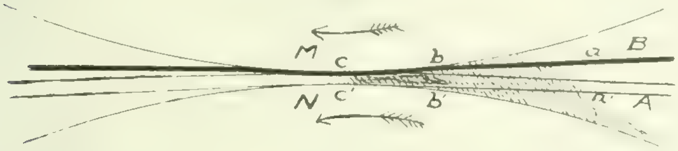
Functions of Press Felts

From the Research Laboratory of F. C. Huyck & Sons,
Operating Kenwood Mills, Albany, N. Y. and
Kenwood Mills, Ltd., Arnprior, Ont.

By E. A. REES

It is the purpose of this paper to indicate briefly some of the principles which have been derived from work in the Kenwood Laboratories on the functions of felts and to present them as subjects for thought and criticism. These principles are not to be regarded as anything new or original; they are and have been, perhaps, perfectly obvious to all paper-makers and the attempt has merely been made to collect them and present them in a graphic manner and on a more or less quantitative basis.

FIG 1



It is not a matter of record as to who first discovered the application of a woolen felt to the art of paper-making but from the earliest days when paper was made by hand and pressed upon a woolen blanket, the peculiar characteristics of the woolen fiber have been recognized. The principal functions of a felt may be classified as first, to couch the paper or to pick it up from the cylinder or from the Fourdrinier wire; second, to act as a carrier to succeeding parts of the machine and third, to act as a medium for the filtration of water. It is desired to confine the discussions in this paper to this last property, that of water-removal.

The durability of paper-maker's felts has always been reckoned either on the days run or the number of pounds of paper made and felts have generally been run as long as they continued to make paper. The growth of technical control in paper-making, however, has led to an inquiry into the different operations and in the desire for the strictest economy, the felt has come to be recognized as having a very important bearing on the cost of paper. In this connection the whole complexion of the rating of a felt has changed. Instead of "days run" only, the efficiency with which the fell performs its many functions has been calculated and this must include not only its wearing life but its ability to act as a filter for the water. The installation of steam meters and the measurement of the steam used in drying have distinctly shown that the felts have a decided bearing on the amounts of steam consumed. It is also quite surprising to note the quantities of water that are removed at the wet-end by means of felts in comparison to the dry-end and the relative cost of removing water by felts and by drying. It is believed that it is to the best interest of paper-makers to know the exact balance between the length of wearing life of the felt and its ability to filter water and some economy may be affected by sacrificing length of service for efficiency in regard to this latter property. It is believed that in most News Mills, for example, that the cost of removing water by drying is in excess of twenty times of the cost of removing it by means of felts. It seems then, that the felt-maker must clearly realize these facts and design felts with a thorough appreciation of the value of the property of water-removal.

When a felt and sheet of paper pass between rolls, the following conditions exist as shown in Fig. 1. Felt A and the wet sheet of paper B pass between the rolls M and N. As particular points, a and a′ adjoining on sheet and felt, move into the nip of the rolls, a position b and b′ is reached where water will begin to be squeezed out of the paper and felt. From this point on, the pressure becomes more and more concentrated, felt and sheet are compressed closer together and water is released from both until c and c′ is reached where the two rolls approach the closest to each other and the greatest concentration of pressure is obtained. It will be noted then that felt and sheet pass progressively through rapidly changing pressure and that the condition of equilibrium of this system under a gradient of pressure distribution will be determined by the relations of many different factors such as—

I. The Pressure Applied.
II. Hardness of Rolls.
III. Radii of Rolls.
IV. The Speed of the Sheet and Felt.
V. The Time of Contact
VI. The Resistance of the Felt to the Flow of Water.

All the experimental work in this paper was performed in the Kenwood Laboratories with apparatus designed so that all the different factors and uses pertaining to felts in actual paper-mill conditions could be measured. Two miniature paper machines designed for the use of small felts, 14′x18″, are continually run-

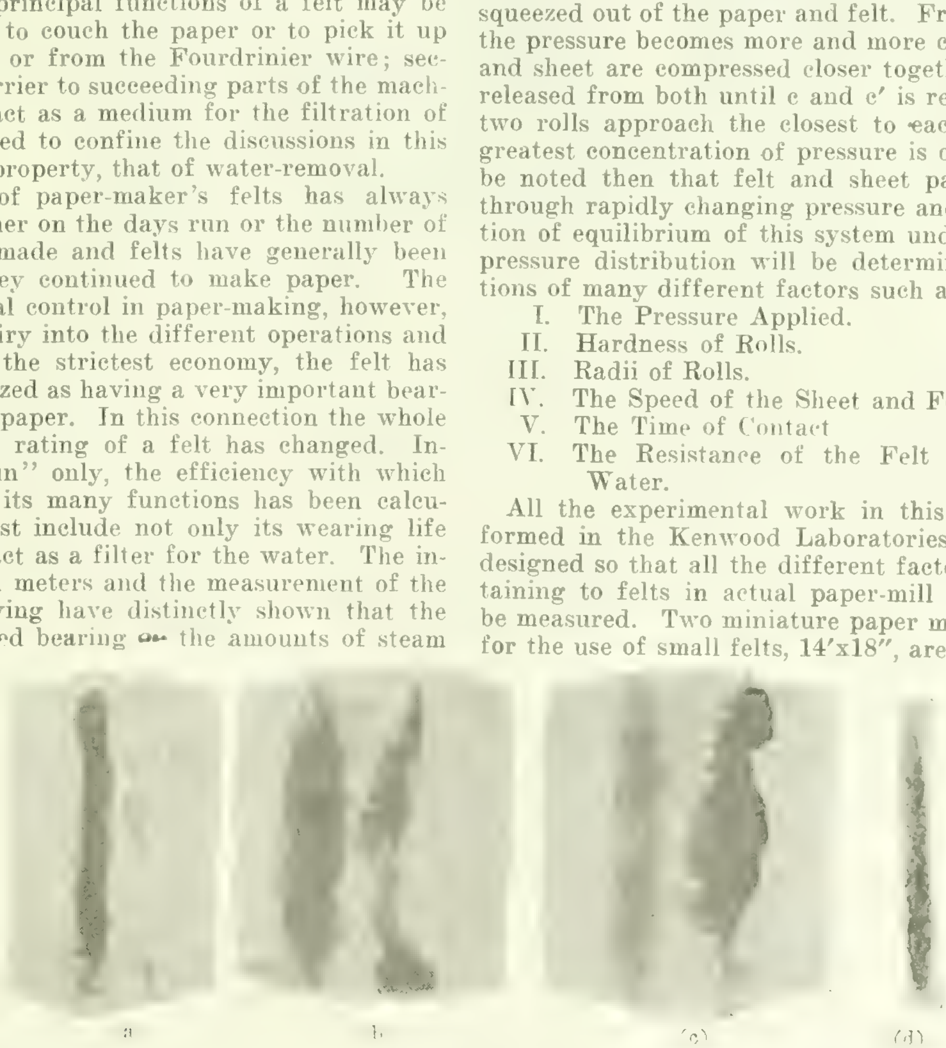


Fig. 2
This figure shows Nip Areas: (a) with iron rolls, (b) with hard rubber rolls, (c) with soft rubber rolls — all with Felt 5975; (d) with iron rolls and no felt.

ning for experimental tests of this nature so as to obtain facts in regard to felts and their application.

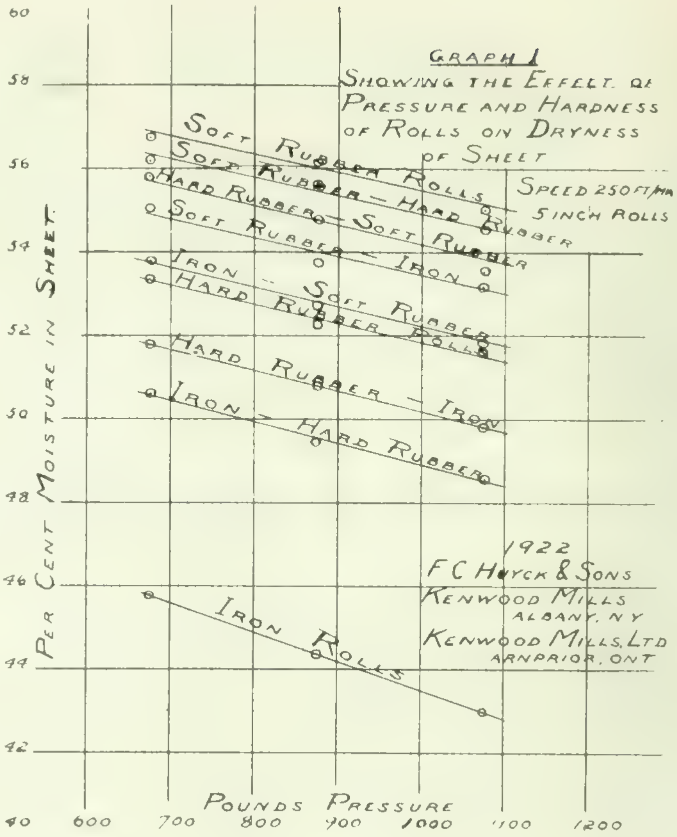
I and II. The Pressure and Hardness of Rolls.—Graph 1 shows the effect of hardness of rolls, and at different pressures, on the dryness of sheet. The large range of difference in dryness as a result of variations of hardness is at once apparent. These tests were all made by saturating small strips of blotting paper and running them through the different rolls with speed, felt and all other factors maintained constant, and then analyzing the pressed strips of paper for moisture content. Fig. 2 shows some crude imprints of the nip contact zones with rolls of 5 inch diameter but of different hardnesses. The pictures of these areas were obtained by ink impressions from the top roll when resting on a sheet of paper lying upon a stationary felt. The soft rolls flatten and spread the pressure so that with the same total pressure the effective pressure per unit area of nip contact is less. The hardness of the roll then automatically affects the pressure concentration and the greatest concentration of pressures is obtained by approaching straight line contacts. It will also be noted that when the two rolls are of unequal hardness that different dryness effects are obtained according to whether the harder roll is on the top or bottom. The harder roll on top in contact with the paper probably gives the smaller contact zone against the paper and consequently greater concentration of pressures and a more concentrated "squeezing." **In this connection then it is quite obvious that the cushion and softness of the felt will also materially affect this contact area and the concentration of the pressures.**

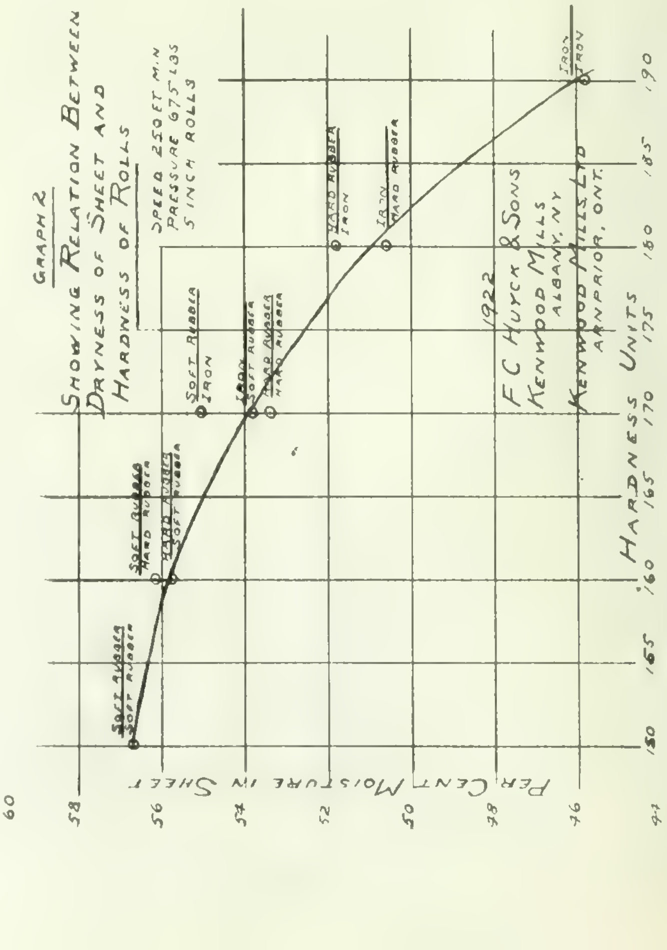
Graph 2 shows dryness of sheet plotted against the sum of the hardnesses of the top and bottom roll with the felt and speed and total pressure maintained constant. The following principles may be derived from these tests. 1. The dryness of the sheet varies directly with the sum of the hardnesses of the two rolls. 2. In case the two rolls are of unequal hardness, the dryer sheet is obtained with the harder roll on the top. This latter principle is quite interesting because it is general paper-making practice and it so happens that this placing of the hardness effects, helps also to conserve the life of the felt.

III. Effect of Diameter of Roll.—Fig. 3 shows some representations of nip contact areas with iron rolls of different roll diameters. The larger roll produces a smaller concentration of effective pressure and consequently wetter sheets of paper. The pressure applied then, the hardness of the rolls, the diameters of the

Note —

All the water-removal tests in this paper were made by using sheets of blotting paper saturated with water. It is possibly true that the state of hydration and the molecular configuration are quite different from what is obtained in any similar sheet as is made in the paper-mill. In other words there is the question as to whether the same state and properties in regard to moisture equlibrium can be reached in the reversible manner of adding water to a finished sheet. However, all the interpretations in this paper are presented merely as relative effects. For comparative purposes then the results obtained with these small sheets should be substantially the same as if the continuous sheet of pulp or wet paper were running on the felt and between the rolls. (Here is a problem for investigation by the Forest Products Laboratories.—Ed.)





rolls and the cushion and softness of the felt all materially affect the area of the contact zone and automatically influence the concentration of pressure per unit area of sheet. It is also quite evident that the differential of pressure distribution change over the area is quite different in all these, cases, and that the pressure spreads from a high concentration at the very nip to smaller and smaller pressures through the zone of contact and these changes may be abrupt or gradual according to the many factors. Work is now in progress in our Laboratories to correlate the effects of these gradients of pressure on the resulting moisture removal properties. The above mere qualitative picture is presented now.

IV. and V. Effect of Speed.—Graph 3 shows the effect of speed on the dryness of sheet. The tendency toward wetter sheets of paper at the higher speeds is quite marked. This effect may possibly be attributed to two things, (1) the force with which the water moves forward due to his own velocity and (2) the time of contact at the nip. The latter is possibly a factor because of the retarding of any change in conditions due to the inherent inertia of the water-felt-paper system and the lag between the application of the forces and their effects. In Graph 4 the identical conditions were maintained while the sheet was run through the presses a different number of times. It will be seen that after three pressings an equilibrium has practically been reached.

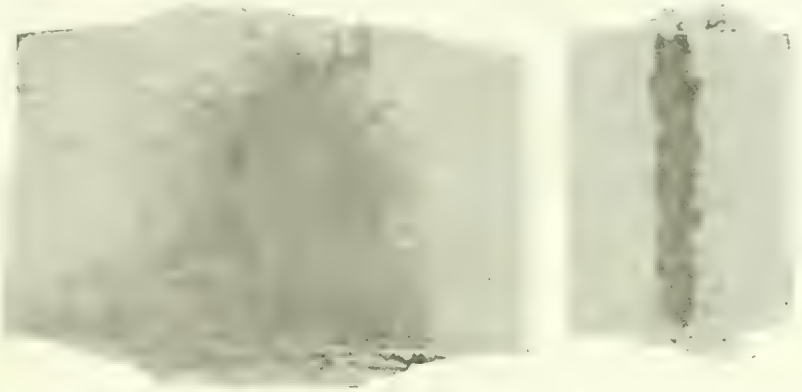

(a) (b)

Fig. 3
This figure shows Nip Areas, using Felt 6221; (a) with iron rolls, 20 in. diameter, (b) with iron rolls, 5 in. diameter.

While there are changes in the moisture content of the sheet in parallel with the number of times of contact, the relative rapidity of reaching an equilibrium, and the necessity for the greatest possible elimination of water at the presses, clearly explains modern practice in applying a gradation of increasing pressures and hardnesses of rolls in proceeding from press to press. The effect of speed is a decidedly important factor in modern high-speed news print manufacture in determining the ultimate cost of paper. Graphs 5 and 6 show the effects of speed with the different hardnesses of rolls and the different diameters of rolls. The different slopes of the curves with these varying conditions are especially significant.

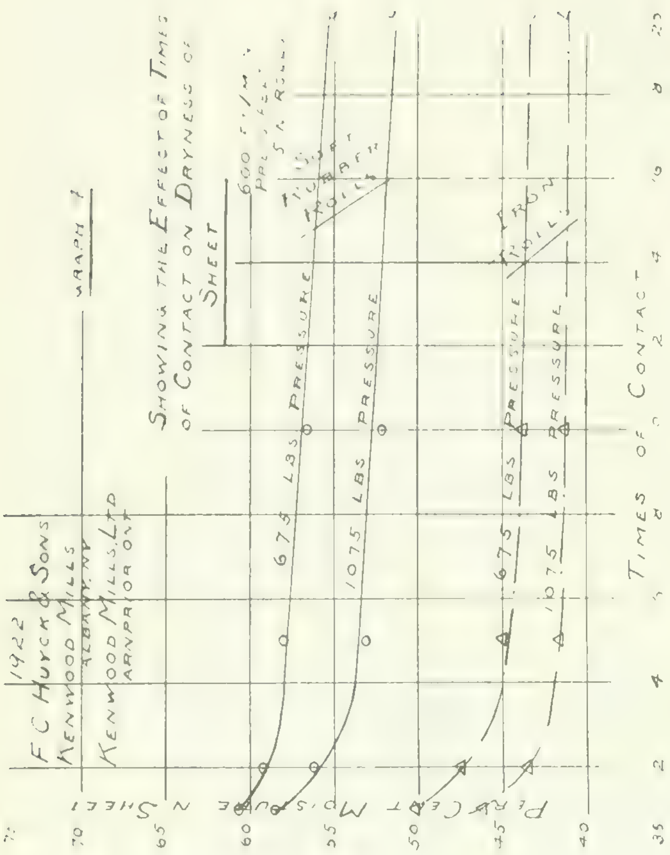
VI. The Resistance of the Felt to the Flow of Water. — The ease with which the felt will admit of the release of the water which has been squeezed from the paper by the combination of all the above effects. which have been noted. is a decidedly important factor in determining the ultimate equilibrium content of the sheet. In many modern mills where technical control has been applied, the limit of the life of a felt is not its lack of resistance to wear but its ability to admit of the flow of water. This is determined by the steam meter on the drying demand. This of course does not entirely designate the relative efficiencies of the felts on the different presses and it is believed that the felts have such a decided bearing on this whole question that it is quite desirable to know the exact status of each felt and each press in regard to moisture removal either by metering the water squeezed out or by measuring the dryness of the sheet at each press.

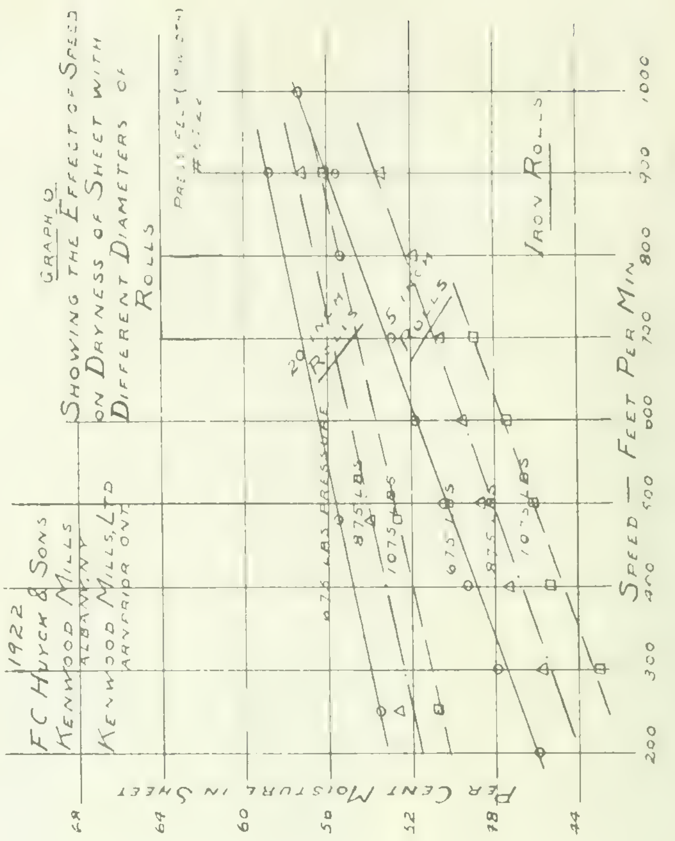
Graph 7 represents tests on water-removal at varying pressures with several different types of felts. All other factors were maintained constant. It is quite apparent that the design of the felt is an important factor in the resulting dryness of sheet. Differences of nearly ten per cent. will be noticed.

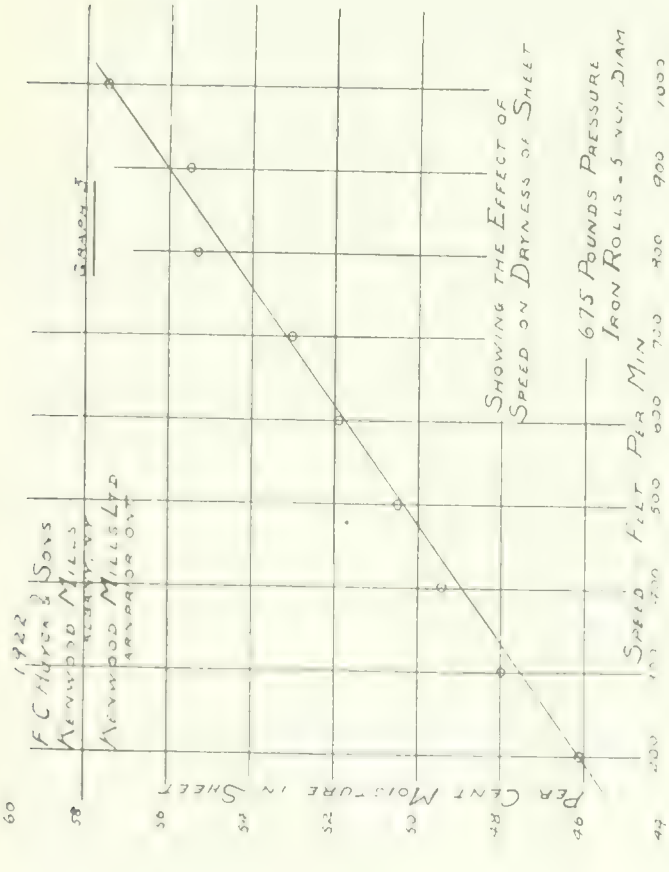
It will be seen in Fig. 1 that the water passes from the sheet into the felt and through the felt throughout a gradient of pressure change. The ease with which water will flow through the felt at these different pressures is a very important factor in determing its efficiency as a water-remover. The openness or porosity of the felt has always been recognized as a desirable property of the felt. And the resistance of the felt to the flow of water is important in determining not only the dryness of the sheet but also other effects which have to do with ease of operation, such as crushing and blowing.

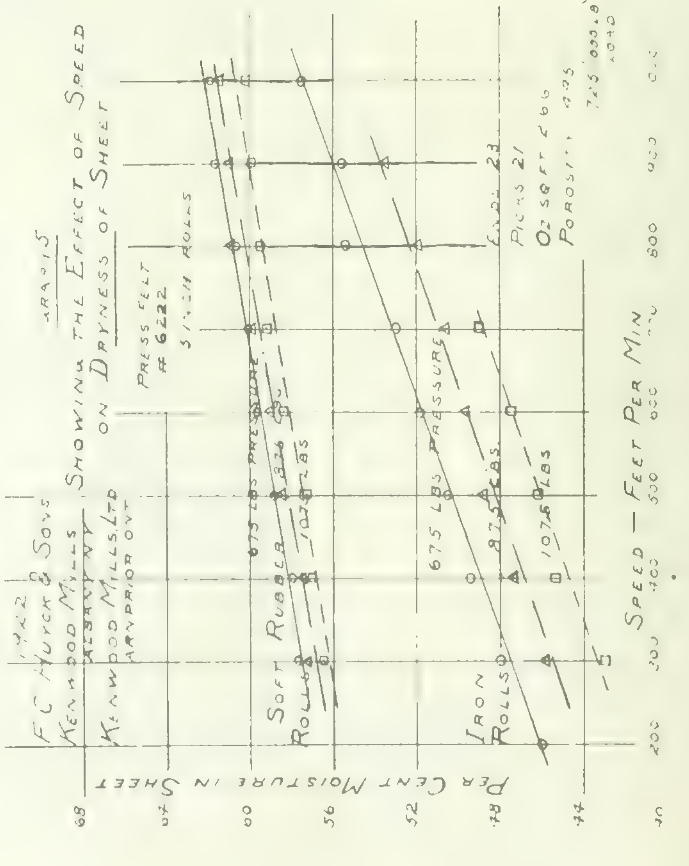
This property of openness has been determined in the Kenwood Laboratories by a small testing apparatus devised so as to measure the quantity of water which filters through a certain area of felt, at a constant head of pressure, in a certain time and with water of a constant temperature. Several types and characters of felts varying over wide ranges of softness and thickness have been studied and the porosity property correlated with the dryness of the sheet obtained. Graph 8 shows that a very definite relation exists between the porosity and the dryness of the sheet.

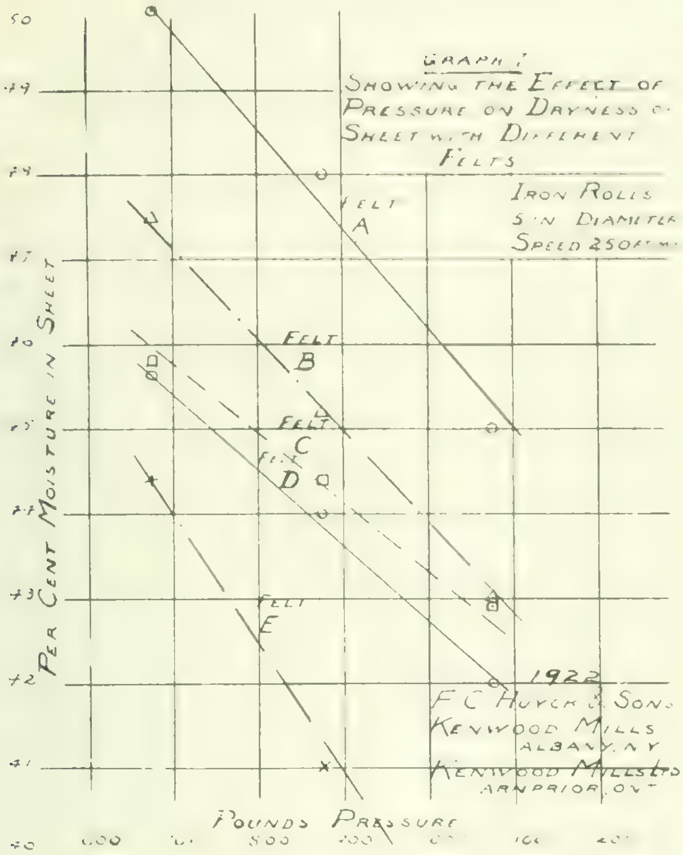
It will be noted, however, that there are some discrepancies as illustrated by several points which do not fall exactly on the line. It has previously been shown how the softness of the fabric also affects the concentration of the pressure upon the sheet of paper. Large variations in this property may so materially affect the concentration of pressure so as to over-balance the porosity effect in different directions. For ex-


Graph 7
Showing the Effect of Times of Contact on Dryness of Sheet
1922
F C Huyck & Sons
Kenwood Mills
Albany, N.Y.
Kenwood Mills, Ltd
Arnprior Ont
600 F/Min
Press Rolls
Rubber Rolls
Iron Rolls
675 LBS PRESSURE
1075 LBS PRESSURE
675 LBS PRESSURE
1075 LBS PRESSURE
Per Cent Moisture in Sheet
Times of Contact
70
65
60
55
50
45
40
35
2
4
6
8
10
20


Graph 6
Showing the Effect of Speed on Dryness of Sheet with Different Diameters of Rolls
1922
F C Huyck & Sons
Kenwood Mills
Albany, N.Y.
Kenwood Mills, Ltd
Arnprior Ont
Press Felt
20 inch Rolls
5 inch Rolls
Iron Rolls
675 LBS PRESSURE
875 LBS
1075 LBS
675 LBS
875 LBS
1075 LBS
Per Cent Moisture in Sheet
Speed — Feet Per Min
68
64
60
56
52
48
44
200
300
400
500
600
700
800
900
1000


Graph 5
Showing the Effect of Speed on Dryness of Sheet
675 Pounds Pressure
Iron Rolls 5 inch Diam
1922
F C Huyck & Sons
Kenwood Mills
Albany, N.Y.
Kenwood Mills, Ltd
Arnprior Ont
Per Cent Moisture in Sheet
Speed Felt Per Min
60
58
56
54
52
50
48
46
44
200
300
400
500
600
700
800
900
1000


Graph 15
Showing the Effect of Speed on Dryness of Sheet
1922
F C Huyck & Sons
Kenwood Mills
Albany, N.Y.
Kenwood Mills, Ltd
Arnprior Ont
Press Felt
# 6222
5 inch Rolls
Soft Rubber Rolls
Iron Rolls
675 LBS PRESSURE
875 LBS
1075 LBS
675 LBS PRESSURE
875 LBS
1075 LBS
Ends 23
Picks 21
Oz sq ft 2.66
Porosity 4.25
Per Cent Moisture in Sheet
Speed — Feet Per Min
68
64
60
56
52
48
44
40
200
300
400
500
600
700
800
900
1000



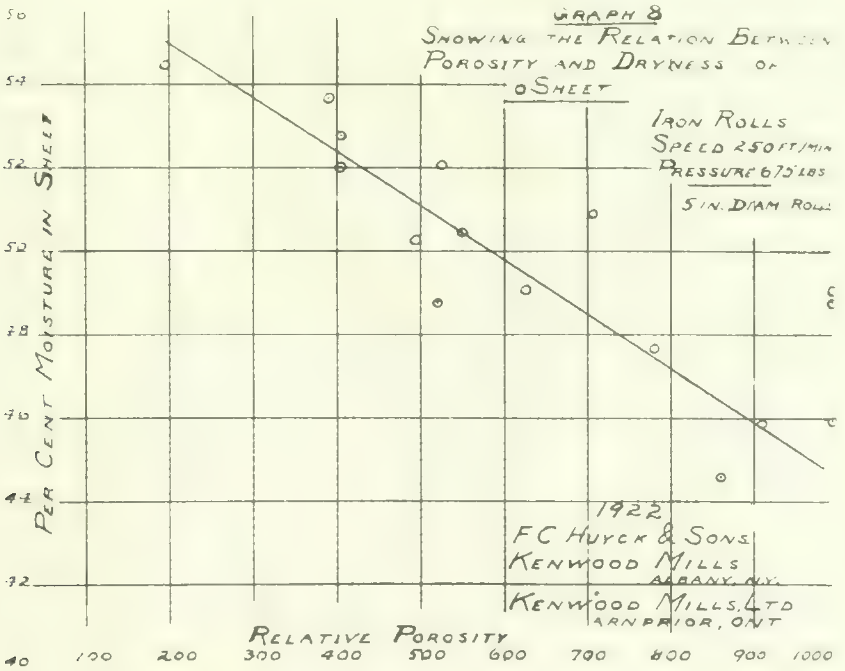
ample a hard close felt might give a dryer sheet of paper than a soft open felt if the concentration of pressure is large enough to off-set the difference in porosity.

It is also quite interesting to note in Fig. 1 that as the sheet and felt approach closer to points c and c' where the rolls are in closer contact, there is more and more resistance to the flow of water because of the impervious roll beneath. And there is also the tendency for the revolving roll to carry the water back into the nip. As the water is released farther back in the nip then, there is more and more necessity for water to permeate through the felt in the direction contrary to its motion. This lateral or backward porosity through a gradient of pressure change is also a factor in determining the efficiency of the felt as a water-remover. Apparatus to measure this property has also been devised in the Kenwood Laboratories.

Conclusion

The proper design of a felt to embody the desired properties of permeability to flow of water, cushion and softness as affecting the concentration of nip pressure, is a problem requiring the closest of study and co-operation between felt-makers and paper-makers. The question of water-removal is becoming of increasing importance in paper-making and requires intensive research not only because of its relation to economy but it may also have a very direct bearing on the quality and formation of sheet.

The above discussion has attempted to portray merely a brief and qualitative picture of a very important field. It is one which merits a lot of thorough and concentrated study.



Steam Utilization in a Modern Newsprint Mill[*]

An Analysis of the Conditions Obtaining in a modern Paper Mill Manufacturing Newsprint, Dealing with the Selection of a Prime Mover, Electric vs. Rope Drive for Paper Machines, the Drying of Paper, Ventilation Requirements, Etc.

By S. W. SLATER[1] AND J. E. A. WARNER,[2] CAP MADELEINE, QUE., CANADA

The purpose of this paper[3] is to show the heat required in the manufacture of newsprint on a modern basis. It is, in general, a detailed study of the concrete conditions found to exist in a modern paper mill with which the authors have been associated. Other conditions found to exist in paper mills have been treated, however, with a view of showing their bearing upon the different subjects which are covered herein, and also to facilitate comparison with other mill installations which are different from the one cited.

In general, the importance of heat conservation has not been appreciated in this industry and, in view of the national movement to conserve natural resources, all newsprint paper mills are in duty bound to study their own particular problem, so that their coal or fuel-oil requirements may be reduced to a minimum. It is hoped, therefore, that this paper may be of assistance to whose who, no longer content with operating by the rule of thumb, desire to analyze their heat load, in order to assist in conservation and to reduce the cost of manufacture.

A survey made as of January 1, 1922, shows that the United States and Canada have a combined daily output of about 8500 tons. The tonnage produced during the year 1921 was approximately 2,038,095 tons, and the value of this tonnage, at a representative figure of $100 a ton, would be $203,809,500.

On the basis of the familiar statement that "One ton of coal is required to produce one ton of paper," the newsprint industry has a yearly fuel demand equivalent to about 2,040,000 tons of coal. In the United States, it has been quoted as occupying sixth place in capital invested and value of product, while in horsepower installed it probably ranks fourth.

Description of Mill Investigated

The building housing the two paper machines is 288 ft. long by 88 ft. wide and has a total height of 45 ft. It is of standard brick and steel construction, with concrete floors and roof, the latter being waterproofed with tar and felt. The paper machines are carried on an operating floor which is 27 ft. from the roof. Underneath is a basement having a height of 18 ft. and its floor at grade level. Only the northeast side is exposed, other buildings adjoining the remaining side and ends. The openings in the exposed wall have a total area of 3000 sq. ft.

The greater part of the driving mechanism for this installation is located in the basement. The prime movers are steam turbines of the single-stage non-condensing type, direct-connected through flexible couplings to reduction gears, and have a rated capacity of 400 b. hp. at a speed of 2675 r. p. m. This gives a speed reduction of about 7 to 1. The turbo-gears in turn drive an English system of rope transmission, in which each section of the paper machine has its own jackshaft, carrying a cone pulley and sheaves.

By means of belts, power is transmitted from the cone pulleys on the jackshaft to the cone pulleys driving each section of the paper machine. The cone pulleys transmit though a friction clutch and herringbone gears to each of the sections. In the case of the drier sections further spur gears are used to drive from one drier to the next in the section.

The Paper Machines

The paper machines are of the Fourdrinier type, are 166 in. wide and have three presses. The drier sections consist of one fore drier, 24 in. in diameter by 162 in. face; 32 driers, 60 in. in diameter by 162 in. face; and two felt driers, for the first section felts, 48 in. by 162 in. All driers are of cast iron, bored on the inside, and turned and polished on the external surfaces. Each drier is equipped with a dipper, to remove the water of condensation. These machines are designed for a maximum speed of 700 ft. per min.

Newsprint consists of from 70 to 85 per cent of ground wood and the remainder sulphite pulp. After the mixture has been reduced to a consistency of about ½ per cent, it is caused to flow onto the wire of the paper machine in amounts carefully regulated so as finally to produce finished paper weighing 32 lb. per ream of 500 sheets, size 24 by 36 in.

The web is formed by the oscillating motion of the Fourdrinier section. Water is removed through the wire, assisted by the capillary attraction of the table rolls, which also act as carriers for the wire. The suction boxes remove a large quantity of water and assist in closing the sheet. The paper then passes between the couch rolls, which press out additional moisture.

In passing through the press sections the sheet is carried on woolen felts between weighted rolls, further reducing the moisture content.

The paper is then ready to enter the driers, where water is removed from the sheet by contact with steam-heated cylinders and is carried through same on canvas felts. The last drier is equipped for cold-water circulation, so as to dampen the sheet before it passes through the calender stack for ironing and polishing, prior to cutting to specified size and winding on cores.

Heat Required for Newsprint Manufacture

In order to show more clearly the heat required for newsprint manufacture, simultaneous tests were conducted on one of the previously mentioned machines to determine the heat demand for driving, drying and ventilating.

The data pertaining to the turbine test are given in Table 1. The steam supplied to the turbine was the same as that used by the driers. In other words, the turbine water rate balanced the drier heat demand and no auxiliary live steam was required.

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[2] Asst. Engr., St. Maurice Paper Co., Ltd. Assoc-Mem. Am.Soc.M.E.

[3] Presented at the annual meeting of the Technical Section of the Canadian Pulp & Paper Association, Montreal, Jan 23-24, 1923.

[*] Paper presented at the Springfield Regional Meeting of The American Society of Mechanical Engineers, Springfield, Mass., Sept. 25-27 1922. Slightly abridged. The kindly co-operation of Mechanical Engineering is acknowledged.

TABLE 1. TURBINE TEST

Initial Steam:	
Pressure, lb. per sq. in. abs.	160. 7
Temperature, deg. fahr.	401. 8
Total heat per lb., B.t.u.	1,217. 8
Exhaust steam used by driers:	
Pressure, lb. per sq. in. abs.	23. 7
Temperature, deg. fahr.	248. 1
Total heat per lb., B.t.u.	1,164. 7
Lb. steam per hour	16,822.00
Lb. steam per min.	280.37
B.t.u. per min. to turbine.	14,747.80
Equivalent B.t.u. per b.hp. (as given by manufacturers)	44.17
B.hp. developed	384.00
Water rate, lb. per hp-hr	50.37

In selecting a suitable prime mover the governing factor is the amount of steam required for drying the paper; consequently it does not follow that the engine or turbine having the lowest water rate is the most suitable.

The water rate of the prime mover, in conjunction with the initial steam pressure and quality, must also be such as to insure approximately dry exhaust steam, at drier pressure, as it is undesirable to have steam of a high moisture or superheat content entering the driers.

Fig. 1 has been prepared to show the effect of the water rate of the turbine upon the quality of the exhaust. It will be noted that for the rate existing at the time of the test the exhaust was superheated 11 deg. fahr., and that when 45 lb. were used per b. hp. per hour the exhaust steam would be dry-saturated.

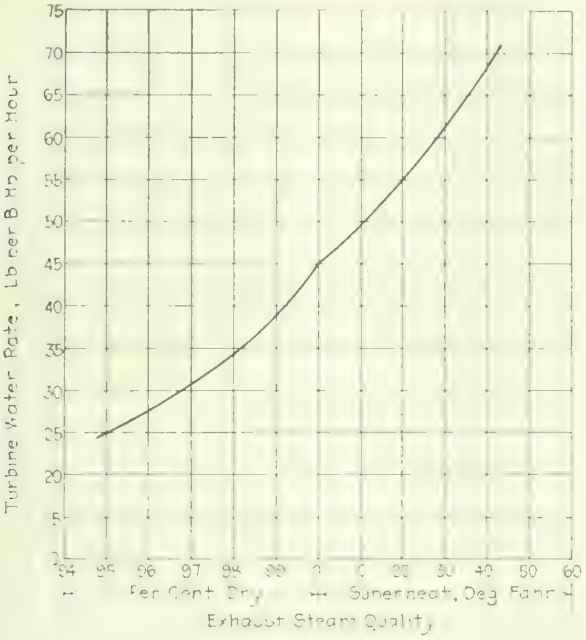

Fig 1.

In the past it has been very difficult to obtain data showing the horsepower requirements of paper machines, but with the advent of motor drives more information is becoming available. It is impossible to give a formula that will cover all installations, for the power requirements will vary with the type and mechanical design of the machine, the conditions under which it is operated and the efficiency of transmission. The following, however, is cited to show approximately the power demand of the variable-speed drive, and is based on a speed of 100 ft. per min. and 100 in. width:

1	Modern highspeed motor-driven machines, having four presses, forty 72-in. driers and operating at speeds varying between 700 and 1000 ft. per min.	25 to 30 hp.
2	Turbine-driven machines, rope drive transmission, having three presses. thirty-two 60-in. driers, and operating at speeds of 550 to 700 ft. per min.	30 to 34 hp.
3	Engine-driven machines, Marshall drive, three presses, thirty-two 48-in. driers, and operating at speeds of from 850 to 600 ft. per min.	33 to 38 hp.

Electric Drives for Paper Machines

Much attention of late has been given to electric drives for paper machines, and in some recent installations the electric energy for driving is generated by a hydroelectric plant. The steam required for the driers is then obtained from high-pressure steam reduced through a pressure-reducing valve to a lower pressure, with consequent superheat; as will be shown later, however, superheat is not suitable for use in the driers.

Further, unless electrical power can be purchased at a cheap rate, it is not thought that such an installation is economical, and for the purpose of illustrating this point the following computations have been made to determine at what price electrical energy would have to be purchased to be the equivalent of steam assumed to cost $0.75 per 1000 lb.

Referring to Fig. 2, which is based on the test given in Table 1, straight line A (205. 1 B. t. u.) represents the heat of the drier condensate, and line C (1217. 3B.t.u.) the total heat of one pound of steam under the conditions given. Curve B shows the relation between the water rate of the turbine and the heat contained in the exhaust available for drying.

AC (1012.2 B.t.u.) therefore represents the heat per pound of steam which would be available for drying if a pressure-reducing valve was used. BC (52.6 B.t.u.) represents the amount of heat abstracted from the initial steam in doing work in the turbine.

It will be seen that the quantity expressed by BC is small in comparison with that represented by AB (959.6 B.t.u.) and that the exhaust steam contains nearly as much heat as the initial steam.

From the preceding data and based on 7600 operating hours per year, to develop one brake horsepower-year, 20,136,000 B.t.u. are required. This is equivalent to 19,900 lb. of steam which, at an assumed cost of 75 cents per 1000 lb., makes the steam cost of a horsepower-year approximately $15.

Assuming the efficiency of the electric drive to be 85 per cent and that of the drive described to be 75 per cent, the cost of purchased electrical power must not exceed $17 per hp. year.

This comparison does not take into consideration interest and depreciation on capital invested or the maintenance and operation costs; but as the initial cost of the electric drive is approximately two and one-half times that of a turbine rope-drive installation, it is thought, that if these costs were considered, the comparison would be favourable to the turbine rope drive.

The electrical installation, however, offers many advantages from the standpoint of operation, and with the development of high-speed machines will no doubt become the most acceptable type of drive. It is the opinion of the authors that the application of the motor drive will prove most economical when the necessary electrical power is developed by a turbo-generator, the exhaust from which would be utilized for drying the paper.

The bleeder or extraction type of turbine would have the advantage of greatest flexibility in that a minimum amount of steam would be wasted during periods of light loads, when practically no steam is required.

Drying Paper

In the drying of paper it is requisite that the moisture be removed gradually to prevent scorching and cockling of the sheet, and this requires a definite temperature gradient through the machine. It is also necessary that the temperature of the paper be kept within certain limits to produce a good, strong sheet.

The authors believe that the logical method to employ in these heat calculations is to base all figures on the pounds of moisture removed from the paper, instead of on the actual production. This is due to the fact that the moisture content is variable, depending upon the number and efficiency of the machine presses and the amount of moisture desired in the finished sheet.

The amount of moisture in the paper entering the drier section generally varies from 65 to 76 per cent, with an average of about 72 per cent. The amount of moisture in the finished sheet varies from 5 to 10 per cent, with an average of about 8 per cent. It is important that enough moisture remain in the finished sheet to insure proper finish and strength.

By the use of the following formula the number of pounds of moisture to be removed per pound of finished paper can be readily determined:

$$W = \frac{M_1 - M_0}{100 - M_1}$$

where W = pounds of moisture removed per pound of dried paper M_1 = percentage of moisture in sheet entering drier section, and

M_0 = percentage of moisture in dried sheet.

It is important that as much moisture as possible be removed from the sheet before it enters the driers. It should be understood, however, that there are limitations to the amount of moisture that can be removed by mechanical means, namely, the possibility of crushing the delicate web of newsprint and the effect on the life of the press felts. Each mill, by considering the above in conjunction with the cost of steam, should determine the most efficient point of moisture removal. (See article on Press Felts in this issue. — Ed.)

In order to determine the economical life of machine clothing, in relation to steam cost for drying, a study of results obtained in several mills was made. This showed that the relation between life of felts and the percentage of moisture entering the driers followed a straight line, and that it is the combined felt-days of all the press felts which determines the moisture in the sheet entering the driers. This is a fortunate relation, in that the operating days of each of the three press felts is seldom the same at any one time.

Fig. 3 shows the relation between the combined felt-days of the three press felts and the average percentage of moisture leaving the presses for the period considered; this period being taken as one-third of the combined felt-days.

Table 2 is self-explanatory and shows the relation between combined felt-days of the three press and the cost per day, in dollars, for steam and felts. The calculated costs do not take into account the labor and the loss of production due to changing clothing. Further, this study only applies for a particular period of fixed steam and machine-clothing costs, and should be revised as conditions change.

Some plants, thinking to economize, have tried to dispense with drier felts. This procedure has not proved satisfactory, for the reason that intimate contact of the sheet with the drier surface is of vast importance in heat transfer. The drier felt also assists in the removal of moisture.

TABLE 2 COST STEAM AND FELTS

	% Moisture entering driers at end of period	Avg. % moisture for period	(1) ÷ 3 Period in days	Moisture evap. per lb. of paper	Lb. steam per day F. & A. 212° F. $\frac{(5)\times5400\times24\times1361}{970.4}$	Cost of steam per day. Dollars. $\frac{(6)\times0.75}{1000}$	Cost of press clothing per day. Dollars.	Cost of steam and felts per day. Dollars. (7) + (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
30	69.60	68.40	10.00	1.911	347,360	260.52	68.00	328.52
35	69.95	68.58	11.67	1.928	350,440	262.83	58.20	321.03
40	70.30	68.75	13.33	1.944	353,347	265.01	51.00	316.01
45	70.75	68.98	15.00	1.966	357,347	268.01	45.35	313.36
50	71.10	69.15	16.67	1.982	360,253	270.19	40.80	310.99
55	71.45	69.33	18.33	2.000	363,533	272.65	37.10	309.75
60	71.90	69.55	20.00	2.021	367,347	275.51	34.00	309.51
65	72.25	69.73	21.67	2.039	370,613	277.96	31.40	309.36
70	72.65	69.93	23.33	2.060	374,440	280.83	29.10	309.93
75	73.05	70.13	25.00	2.080	378,067	283.55	27.20	310.75
80	73.45	70.33	26.67	2.101	381,893	286.42	25.50	311.92
90	74.20	70.70	30.00	2.140	388,973	291.73	22.65	314.38
100	75.00	71.10	33.33	2.183	396,800	297.60	20.40	318.00
110	75.80	71.50	36.67	2.228	404,973	303,73	18.55	322.28
120	76.60	71.90	40.00	2.274	413,333	310.00	17.00	327.00

NOTE: 8 per cent moisture in dried paper. Steam cost assumed at $0.75 per 1000 lb. No tests are available for moisture entering driers with complete new press clothing but from a study of results which might be expected, it is assumed that moisture entering under these conditions would be 67.2 per cent.

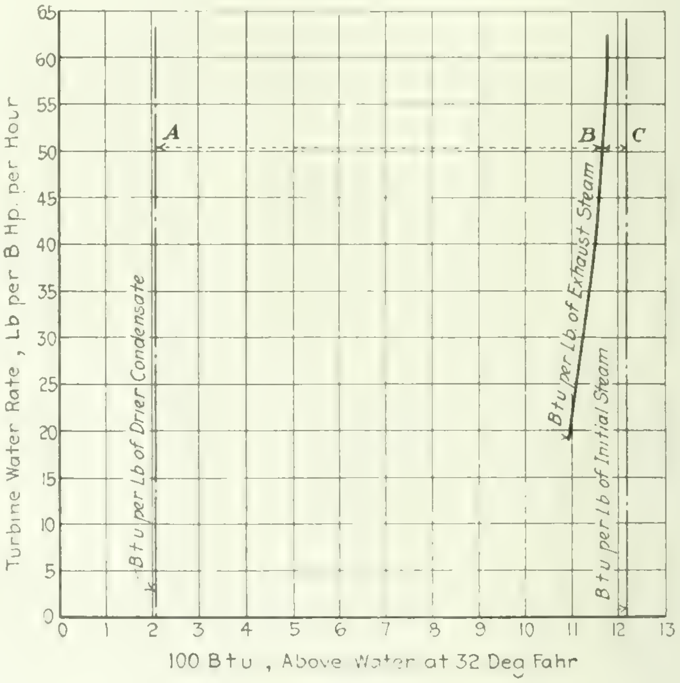

Fig 2.

It has been noted that a new drier felt results in a decreased steam consumption of about 300 lb. per ton of production as compared with an old one. This is due to the fact that as the felt ages, the meshes gradually become closed.

In investigating the action of the driers, that portion of them in intimate contact with the sheet has been termed the "effective" surface, while the remainder has been called "free" surface. In making comparisons between different machines the ratio of the effective surface to the total surface should always be stated.

The amount of radiating surface which does not direct useful work increases with the drier diameter, and to show the effect of diameter on effective surface, Table 3 has been prepared for a 166-in. drier with an actual working face of 156 in. This table is of interest in connection with the design of modern machines, where the high speed required must be obtained either through large diameter of driers or the greater relative speed of those of smaller diameter.

TABLE 3 EFFECT OF DRIER DIAMETER ON EFFECTIVE SURFACE

Diam. of driers, ft.	Total surface in sq. ft. (T)	Effective surface in sq. ft. (E)	Ratio E/T
4	199	104	0.523
5	257	130	0.506
6	317	156	0.492

To obtain the maximum value of the ratio E/T, the drier section should be designed so as to obtain as large an arc of contact as possible, consistent with ease of handling paper and changing drier felts. Experience shows that with an open pit under the drier section the life of the felts is materially increased, owing to the better ventilation afforded.

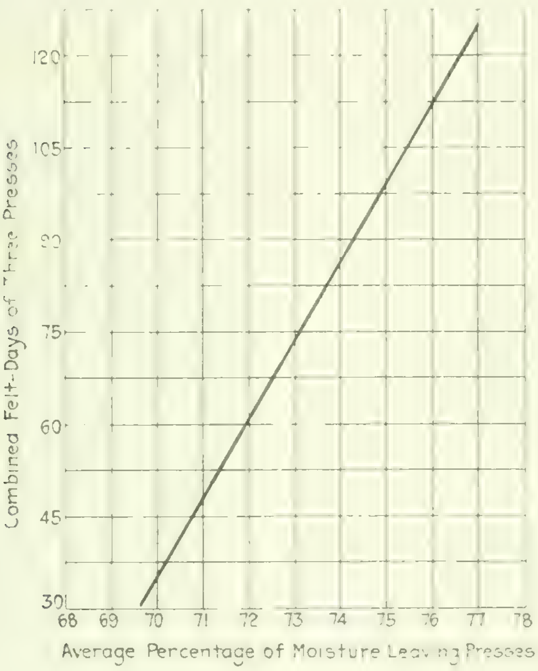

Fig 3.

There are two methods in general for removing condensation from driers, namely siphons and revolving dippers; and opinions are at variance as to which is to be preferred. Unfortunately, neither system is capable of completely removing all the condensation, and there is always present a small depth of water in the bottom of the driers.

Owing to the fact that the machines must be operated from the front side, it is the practice to locate the inlet and condensation outlet in the back side of each dreir. This arrangement does not permit of a uniform or rapid circulation of steam within the driers. It is the authors' opinion that some system whereby a more rapid circulation of steam were made possible, would increase to a considerable extent the heat transfer. This could be accomplished, if it were possible to connect a number of driers in series in such a manner that the circulation of steam would follow the desired temperature gradient.

Air and other inconsiderable vapors, allowed to accumulate in the driers, retard heat transmission and also result in unequal temperature across the drier face. A suitable air valve should be installed to permit of rapid extraction, without allowing steam to pass.

Absolutely clean internal surfaces are required to obtain maximum heat transfer. With engine-driven machines the internal surface of the driers becomes coated with a film of oil, as oil separators do not completely remove all the lubricant from the exhaust. The turbine, however, requires no internal lubrication, and is therefore superior to a steam engine as a prime mover. The external surfaces must also be kept clean of all accumulations of dirt, grease and lint from the paper.

Superheated steam, while undoubtedly of great value for prime movers, is not desirable for drying purposes, in that it is similar in its properties to gases and parts with its heat much less readily than saturated steam. No doubt some will contend that superheated steam would tend to become saturated by contact with the condensate, but it is thought that this would take place to a very limited extent. The amount of water in contact with the steam varying from time to time, would result in variations in temperature within the drier. Some expert papermakers contend that superheated steam produces an inferior quality of newsprint as compared with that dried by saturated steam.

The test of the drier part of the machine is given in Table 4. As shown by this table, 269,043 B.t.u. were absorbed by the driers, equivalent to 1342 B.t.u. per pound of moisture evaporated. It will be shown later that the air in passing through the drier sections absorbed 272,837 B.t.u. per min., equivalent to 1361 B.t.u. per lb. of moisture evaporated. The higher value has been used in subsequent calculations.

TABLE 4 TEST OF DRIER

Working width, inches, (deckle)	156
Speed, ft. per min.	650
Effective heating surface, sq. ft.	4,401
Total surface, sq. ft.	8,272
Ratio of effective to total surface	0.532
Weight of paper (lb. per 500 sheets 24 × 36 in.)	32
Lb. paper dried per minute	90
Percentage of moisture in sheet entering driers	71.5
Percentage of moisture in sheet leaving driers	8.0
Lb. moisture evaporated ped lb. of dried paper	2.228
Lb. moisture evaporated per minute	200.5
Steam pressure in driers, lb. per sq. in. abs.	23.7
Temperature of steam in driers, deg. fahr	248.1
Total heat of steam supplied to driers, B.t.u. per lb.	1,164.7
Heat of condensate, B.tu. per lb.	205.1
B.t.u. absorbed by driers per lb. of steam	959.6
Lb. steam per hour to driers	16,822
Lb. steam per minute to driers	280.37
B.t.u. absorbed by driers per minute	269,043
B.t.u. absorbed by driers per lb. of moisture evaporated	1,342

At the time that the test was conducted to determine the heat absorbed by the driers, data were also obtained giving the temperature gradient throughout the driers and the amount of moisture evaporated per pound of dried paper in each increment of travel, as shown by Fig. 4. By integration the theoretical amount of heat required to evaporate the moisture was determined. as shown by Table 5.

It will be noted in this table 2.228 lb. of water were evaporated from the sheet in its complete travel, and that the theoretical heat required to do this work amounted to 2412 B.t.u. Therefore, the theoretical heat required to evaporate one pound of moisture from the sheet, under the conditions as shown, is 1083 B.t.u.

In making drier calculations it is well to remember that the only useful work performed is the evaporation of moisture from the sheet, and that therefore the theoretical amount as determined by the conditions of the test, divided by the heat supplied, must give the effiency of the driers.

Based on the figure of 1342 B.t.u. determined by the drier tests, the efficiency is 80.7 per cent, while on the basis of 1361 B.t.u., derived from the air test. it is 79.6 per cent.

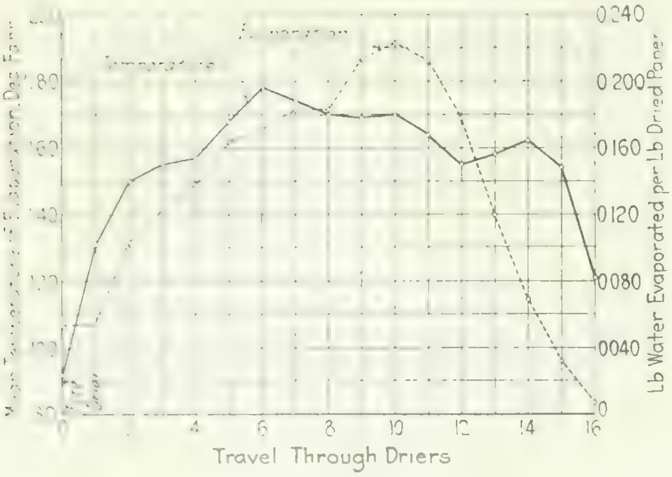

Fig. 4.

To dry paper efficiently the temperature conditions throughout the drier sections must be closely regulated. In the past, temperature control has been obtained by means of a thermostatic valve, which was dependent upon the temperature existing in one drier only. While this has given good results, the latest practice calls for sectional control, which has improved the ease of regulation.

TABLE 5 THEORETICAL HEAT REQUIREMENTS OF DRIERS PER LB. OF PAPER

Drier No.	Moisture leaving drier	stock in sheet	Lb. water per 092 lb.	Lb. water evap'ted in travel through drier	Mean temp. of evap., deg. fahr.	Latent heat	B.t.u	Heat of liquid
	[1]71.5	[1]28.5	2.308	.	[1]80	.....	......	.....
Fore	71.0	29.0	2.254	0.054	92	1040.0	56.16	0.65
1	70.5	29.5	2.199	0.055	131	1018.2	56.00	2.81
2	69.5	30.5	2.096	0.103	150	1007.4	108.76	7.21
3	68.2	31.8	1.973	0.123	155	1004.5	123.55	9.23
4	66.2	33.4	1.835	0.138	157	1003.4	138.47	10.63
5	64.5	35.5	1.671	0.164	168	997.0	163.51	14.43
6	62.0	38.0	1.500	0.171	178	991.1	169.48	16.76
7	59.0	41.0	1.317	0.183	174	993.5	181.81	17.20
8	55.2	44.8	1.1336	0.1834	170	995.8	182.68	16.47
9	50.0	50.0	0.9200	0.2136	169	996.4	212.88	19.05
10	43.1	56.9	0.6969	0.2231	170	995.8	222.16	20.07
11	34.5	65.5	0.4846	0.2123	164	999.3	212.15	17.81
12	25.0	75.0	0.3067	0.1779	155	1004.5	178.70	13.34
13	16.9	83.1	0.1871	0.1196	158	1002.8	119.98	9.33
14	11.8	88.7	0.1183	0.0688	162	1001.1	68.88	5.64
15	8.6	91.4	0.0866	0.0317	154	1005.1	31.86	2.35
16	8.0	92.0	0.0800	0.0066	121	1023.9	6.76	0.27
Total. . . .				2.2280			2228.64	188.25

[1] Condition of sheet entering the drier.

Without suitable experimental equipment it is very difficult to proportion the total heat transfer into that quantity absorbed by the sheet and that acquired by the surrounding air. It is thought that these quantities, once determined, would be of great assistance to the designers of paper machines, as at present, so far as the authors are aware, all calculations are based on an arbitrary figure.

Heating and Ventilating

Ventilating air supplied to a machine room may be considered as serving three distinct purposes:

1. It maintains such temperatures and humidities within the room that the operators may perform their work in comfort
2. During the period of low outside temperature it supplies sufficient heat to replace the radiation loss from the building
3. It acts as a carrier for the moisture liberated by the machine, so that this moisture is conveyed to the outside air without condensation taking place in the room.

The quantity of air supplied to a machine room depends to a large degree upon desired machine-room temperature and humidity; and it will be found for the ordinary room, all other conditions considered, that the quantity of air insuring greatest economy is largely exceeded. This practice is only adhered to because of the resulting comfort of the operators.

Even under the best conditions the temperatures found in a machine room are quite high. Particularly is this true in the vicinity of the roof and in monitors, where the average temperature may vary from 80 to 100 deg. fahr. Further, the walls of a modern machine room contain a large glass area, resulting in a considerable heat transfer to the outside air. The radiation loss for the building under discussion may be calculated from the formula $\mathbf{y} = 5.1 - 0.0583\mathbf{x}$, where $\mathbf{y}$ is the radiation loss per pound of air in B.t.u., and $\mathbf{x}$ the outside or initial air temperature in deg. fahr. This formula is based on an exhaust-fan discharge of 5422 lb. of air per minute, and it shows that the radiation loss from the building makes a very appreciable demand upon the heating load for ventilation.

The air supplied for carrying away the moisture from the machine may be considered as ventilating the machine, apart from the ventilation of the room. This air, in its passage through the machine room, acquires from the wet end a certain amount of moisture, but no heat, and from the driers, both moisture and heat. It must, therefore, when expelled from the room, contain this moisture and heat, together with that which it contained when coming in contact with the machine. Provided, therefore, that the initial and final conditions of the air are known, and also its quantity per unit of time, the amount of moisture and heat liberated by the machine can be readily calculated.

In order to determine these quantities, so that they could be used as constants in further calculations, a test, previously referred to, was conducted on a still day in summer when the machine-room windows were all open and air of a uniform temperature was supplied to the room. The advantage of making this test in summer rather than in winter is apparent when it is considered that in winter considerable leakage takes place through openings from adjoining buildings and from the outside air, which renders it difficult to arrive at a representative value of the temperature and relative humidity of the incoming air. Also the outside temperature at the time being 83.3 deg. fahr., the radiation loss from the building could be neglected without introducing any appreciable error. The results of this test are shown in Table 6.

In making this test the discharge of hot air from each of the stacks was determined by dividing their rectangular cross-section into 24 equal divisions, and the velocity at the center of each of these divisions was determined by means of an anemometer. Wet-end dry-bulb temperatures were taken at the same time, and the discharge as computed in cubic feet per minute was converted into pounds per minute. Carrier's pyschrometric charts were used to determine the moisture per pound of dry air and the total heat above 0 deg. fahr. per lb. of air. These charts were of great assistance in simplifying the calculations.

It is thus seen that the quantity of heat given up by the driers per minute as calculated on the ventilating-air basis, checked that as calculated on a steam basis within 1.5 per cent.

TABLE 6 VENTILATING-AIR TEST

	Stack No	Dry-bulb temp., deg. fahr.	Wet-bulb temp., deg. fahr.	B.t.u. per lb. of air above 0° F.	Grain Moisture per lb. dry air	Lb. air per min.	Lb. dry air per min.	Lb. moisture in air	B.t.u. above 0° F contained in air
Final air in stack	2	118	107.0	82	360	1766	1680	86	144,812
	1	110	108.0	85	396	1788	1692	96	151,980
	3	121	113.0	95	445	1868	1756	112	177,460
Total						5422	5128	294	474,252
Initial air entering room		83.3	76	38.6	123.3	5218	5128	90	201,415
Difference in moisture and heat content between final and initial air								204	272,837

The difference between the moisture acquired by the air, 204 lb., and that liberated by the driers, 200.5 lb., can, in the opinion of the authors, be reasonably taken as the amount of moisture acquired by the ventilating air from the wet end of the machine, and in this case amounted to 3.5 lb., or less than 2 per cent of the total.

When, therefore, the machine is operating at 650 ft. per min. and 5422 lb. of air are expelled by the exhaust fans, the heat given up by the machine per minute is 272,837 B.t.u. and the moisture liberated in the same time is 204 lb.

If then values are assumed for the initial air condition, it is possible, by utilizing the above figures, to determine the final moisture and heat content of the air per pound, and by comparing the heat content of air containing this moisture with that of air containing the same moisture and at saturation, or 80 per cent relative humidity it is possible to determine what degree the initial outside air must be heated before entering the machine room, in order that it may function properly.

It must be borne in mind that the above statement presupposes that for low outside-air-temperatures the ventilating air is preheated before admission to the machine room. Consequently, upon reaching the machine its temperature will be practically the same as applied when the test was made, and therefore the heat transfer from the driers, and the moisture absorbed from the wet end, will not, for practical purposes, be changed.

Table 7 has been prepared on a basis of initial air at 70 per cent relative humidity. From this table Fig. 5 has been plotted, which serves the purpose of estimating the machine heating load for various outside temperatures.

By referring to Fig. 5, it seen that for the ventilation of the machine only, there is some critical temperature, in this case 66 deg. fahr., below which the outside or initial air must be preheated before coming in contact with the machine. In practice, however, this critical temperature would be slightly higher, as it is not common practice to expel the air from the machine room at a relative humidity (R. H.) as high as 100 per cent. If the final air had a relative humidity of 80 per cent, the critical temperature would be 78 deg. fahr.

By combining the quantity of heat per pound of air required by the machine with that necessary to replace the radiation loss from the building, the total heat per pound of air required for the purpose of ventilation can be determined.

The important factor which influences the ventilating requirements of a paper mill is the amount of moisture liberated by the machine per unit of time. This in turn is dependent upon:

1 Speed of the machine
2 Moisture in sheet entering the driers
3 Moisture in sheet leaving the driers
4 Moisture absorbed from the wet end.

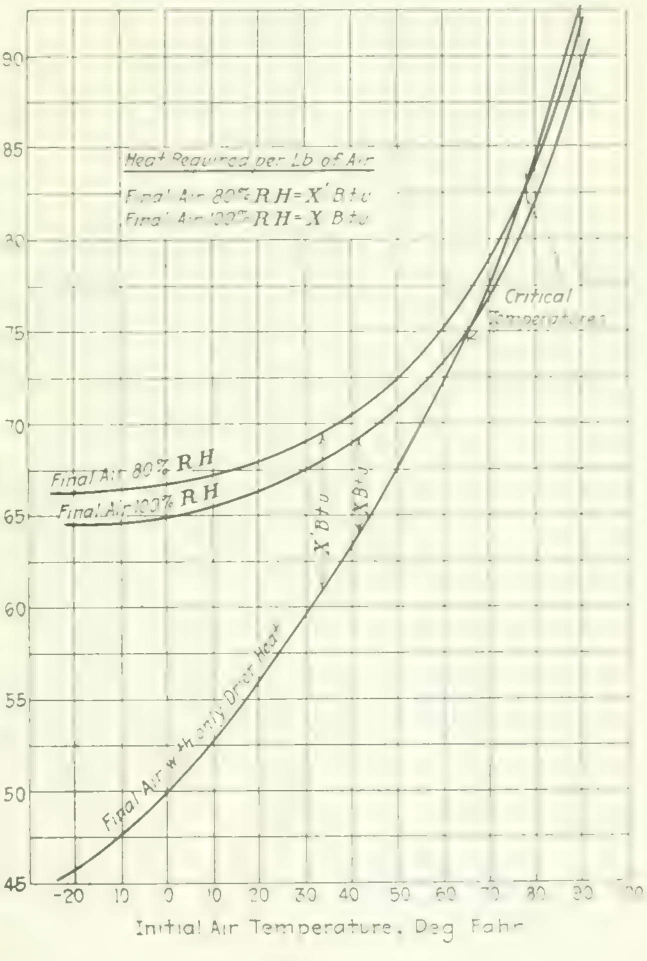

Fig. 5.

TABLE 7 SHOWING CHANGE IN AIR CONDITION WHILE PASSING THROUGH THE MACHINE

Initial Air Condition								Absorbed From Machine			Final Air Condition								
Temperature °F.	% Relative Humidity	Gr. Moisture per lb. of dry air	Heat above 0° F. per lb. of air, B.t.u.	Lb. of air per min.	Lb. dry air per min.	Total moisture	Total heat, B.t.u.	Moisture from wet end, lb.	Moisture from driers, lb.	Heat from driers, B.t.u.	Total air, lb.	Total Moisture lb.	Dry air lb.	Gr. moisture per lb. of dry air	Heat above 0° F. in total air, B.t.u.	B.t.u. per lb. of air		B.t.u. per lb. of air 80% R. H. and same moisture
−20°	0	[illegible]	−4.8	5218	5218	0	--25046	3.5	200.5	272,837	5422	204	5218	[illegible]	247,791	45.7	64.5	66.8
+10	70	6.5	2.5	5218	5213	5	13045	3.5	200.5	272,837	5422	209	5213	[illegible]	285,882	52.7	[illegible]	67.1
30	70	17.0	9.75	5218	5205	13	50876	3.5	200.5	272,837	5422	217	5205	292	323,713	59.6	67.5	69.0
40	70	25.6	13.6	5218	5199	19	70965	3.5	200.5	272,837	5422	223	5199	301	343,802	63.3	69.0	70.5
50	70	37.3	17.9	5218	5190	28	93402	3.5	200.5	272,837	5422	232	5190	313	366,239	67.5	70.7	72.4
60	70	54.0	22.8	5218	5178	40	118970	3.5	200.5	272,837	5422	244	5178	330	391,807	72.2	73.8	75.2
70	70	76.0	28.3	5218	5162	56	147669	3.5	200.5	272,837	5422	260	5162	353	420,526	77.5	76.8	79.0
80	70	107.0	35.6	5218	5140	78	185761	3.5	200.5	272,837	5422	282	5140	384	458,598	84.5	82.8	84.3
90	70	149.2	44.2	5218	5110	108	230636	3.5	200.5	272,837	5422	312	5110	427	[illegible]	92.7	89.4	91.6

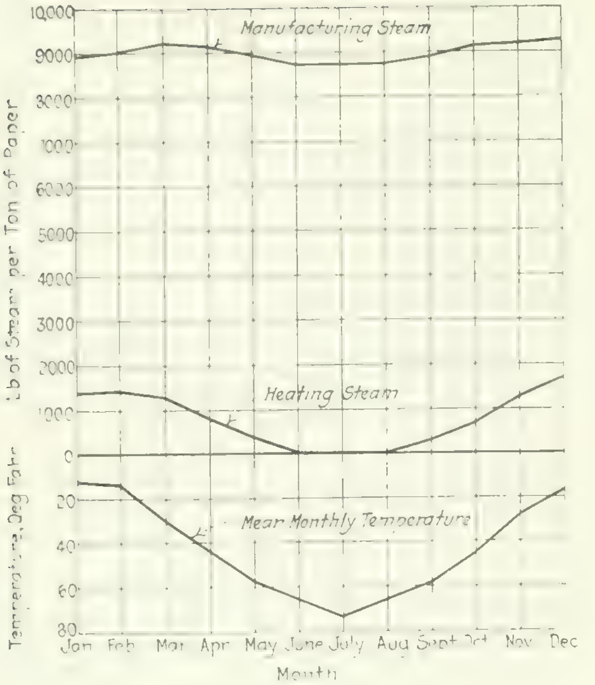

Fig. 6.

The old practice, therefore, of specifying paper-mill ventilation on a basis of so many minutes air change, without due regard to the moisture liberated, is not correct, as it is obvious that the amount of moisture liberated in two machine rooms of the same size might be entirely different.

Much of late has been written regarding the proper distribution of air in the machine room, but it is not the intention of the authors to discuss this further, except to state that, in their opinion, the greater part of the ventilating air should be delivered in the vicinity of the driers and the wet end, so that the moisture may be confined at its source. Further, that sufficient warm dry air should be supplied to the roof and all pockets, such as monitors, in order that the moisture-laden air shall not become chilled below the dewpoint, causing drip.

The amount of heat lost to the process by the expelled ventilating air is in all probability the greatest unpardonable waste in the manufacture of paper.

By referring to Table 7, it can be seen that, with initial air at 10 deg. fahr. and of 70 per cent relative humidity, the total heat above zero deg. fahr. is 2.5 B.t.u. per lb., and the heat content of a pound of final air at 100 per cent relative humidity is 65.5 B.t.u. above 0 deg. fahr., the difference in the heat content per pound of air being 63 B.t.u.

Only 12.8 B.t.u. per lb., however, have to be furnished in order to preheat the incoming air, the balance of this difference being supplied by the driers. It is here that an economizer could be used to great advantage in reclaiming from the expelled air enough heat to condition the incoming air.

Owing to the high relative humidity of the outgoing air, a few degrees' drop in temperature in the economizer would be sufficient to supply heat necessary to preheat the incoming air, with the result that no live or exhaust steam would be required for ventilation.

The saving in operating cost which would result in winter from such an installation is apparent when it is considered that, for the conditions under consideration, at least 5900 lb. of dry steam, at 10 lb. per sq. in. pressure, would be required per hour for preheating the ventilating air when the outside temperature was 10 deg. fahr. and the relative humidity 70 per cent.

Fig. 6 shows for the period of one year the manufacturing and heating load in pounds of steam per ton of product, also the mean monthly temperature which prevailed. It is interesting to note the relative importance of the heating load, and it can be readily realized that the manufacturing cost could be considerably reduced if, by the installation of an economizer, this were done away with.

This paper does not make a complete survey of the subject under discussion, but the authors, in seeking to collect material for the subject-matter, have been impressed with the lack of detailed information which is available. It may be that some mills have studied their problems in great detail, but if so, the information is treated as strictly confidential. It can be understood that, once a paper machine is installed, the owners are reluctant to decrease production while making experimental tests. Therefore, paper-machine manufacturers are unable, in certain respects, to procure reliable operating data upon which to base their designs.

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift

In reviewing the year which is now fast slipping from our grasp, we can rest assured that if we have gone through it without practicing thrift, it can be set down as a wasted period in our lives. For thrift is at the foundation of all substantial success in life.

It is a matter of secondary consideration whether one's income during this period has been greater or smaller than before. If one has earned more than previously and has nothing to show for it, his success is not equal to that of the person who has not been able to earn so much, but who has been practicing thrift. and therefore has something to show for the year's accomplishments.

Very few persons are purposely or willfully thriftless. Lack of thrift is in most cases the result of procrastination. Many of those who are not thrifty feel that they have not reached a place where circumstances or personal convenience will permit of their saving money.

But do not allow yourself to be deceived by any such false reasoning. Generally speaking, it is just as easy to begin thrift one time as another. It may seem to you that in the future you will be better fixed for saving money, but as you go on, month after month, you will find that even though conditions may apparently improve with you the temptation to waste your financial resources is just as strong.

The coming New Year will be a most auspicious time for the beginning of a thrifty life. Do not procrastinate, no matter what your circumstances in life may be.

Make the start.

Resolve that when this period comes around next year you will have something to show for your time and labor. These end-of-the-year days constitute an opportune time for the start in thrift practices.

PULP WORKERS

The pulp industry of Pennsylvania employs 7,144 persons, and the wages and salaries approximate $12,500,000 a year.

The Determination of the Effect of Pressure on the Strength of Test-Sheets in the Strength-Testing of Pulp

By E. P. CAMERON, B.Sc.

Chief of Division of Pulp and Paper Forest Products
Laboratories of Canada

(Dominion Forestry Branch, Montreal.)

In the testing of a pulp for strength, test-sheets are formed from a prepared slush of the pulp, either by means of a hand-mold or by some form of constant-weight sheet machine. The sheets thus formed are couched off with felts, pressed, dried and tested.

In a critical study of the details of this procedure it is found that no operation in it has more effect on the ultimate strength of the test-sheet than that of pressing. We have but to compare the strengths of pressed and unpressed sheets of identical composition and formation to amply demonstrate this.

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The effect of variables entering into the other steps of the procedure have been more or less thoroughly investigated but a search has been made in vain for any published data on the effect of varying the pressure. Its importance lies not only in the fact that a standard method for testing the strength of a pulp should develope its maximum possible strength, but more particularly in the elimination of the personal error in carrying out the tests. At the present time all mills which carry out strength-tests on their pulps are using some form of hand-screw press. In some cases these presses are of light construction and the pressures obtained are correspondingly low. In other mills heavily constructed presses are used and are screwed home by means of a stout bar inserted through the handle. Obviously, if pressure has any effect on the strength, these two methods will yield entirely different results with the same pulp.

In the ordinary method of pressing it is safe to assume that the pressure actually applied to the sheet does not exceed fifteen pounds per square inch. The increase in strength due to this pressure is amply demonstrated by the following results.

Treatment	Strength (Mullen) per cent
Unpressed	14.8
Pressed in small screw letter-press	26.7

These results each represent the average of ten sheets, five bursting-tests being taken per sheet. The sheets were nearly identical in composition and formation as it is possible to obtain so that the results are directly comparable.

From these results it is seen that the increase in strength developed by this simple means is approximately one hundred per cent. The question that naturally arises is — Will this increase in strength continue in the same ratio for corresponding increases in the pressure applied? If this is so, or even only approximately so, the different methods of pressing previously referred to will yield entirely different results with the same pulp, and the necessity of a standardized method of pressing is made apparent.

It was in an attempt to obtain data on this problem that the following series of tests were undertaken. The pressures applied have been carried to great extremes purely from the point of view of scientific interest and not with any idea that such pressures should be incorporated in any standard method of testing for routine mill-work. The lower pressures, used however, are well within those easily obtained by inexpensive means in any mill.

Variables in the sheet itself such as formation, basis-weight and moisture-content would undoubtedly affect the results of the test so that these were investigated at the same time.

Apparatus and Manipulation

The stock used for these tests was unbleached sulphite pulp received at the Laboratories in the form of machine dried sheets. In the preliminary preparation of this stock there were two alternative methods to consider, namely:

The preparation of separate batches of stock for each day's tests, or the preparation of sufficient stock at the start to insure an ample supply for all the tests desired.

The first method had the following objections: probable variations in the amount of hydration obtained in the disintegration of each batch of stock, increased work necessary to bring the stock to the same consistency each time, and possible variations in the pulp itself.

The latter method eliminates all of the above objections, but is open to that of the probable increase in hydration due to standing in the slush state throughout the whole time of the experiments. This latter method was adopted and from strength tests carried out on the stock at the beginning and at the end of the work the effect of standing in the slush state for this period of time was found to be negligible. As the results of this test may prove of interest they are set forth in the following table:

Particulars of Samples	P. C. Strength Mullen Test	Tensile Test
From chest Dec. 7th 1922.	26.7	27.3
From chest Jan. 3rd 1923.	29.1	27.28

The sheet pulp was disintegrated in the small 40-pound beater of the Laboratories for fifteen minutes with the steel roll well raised. This treatment was carried out purely as a means of opening out the stock, any actual beating action being avoided, as it was desired to carry out the tests on unbeaten stock. Whatever hydration was caused by this treatment was so very slight as to be negligible and was constant for all samples taken. After this treatment the slush stock was transferred to a small chest where it was kept throughout the duration of the tests.

Procedure in Forming the Test-Sheets

The stock in the chest was thoroughly stirred previous to the taking of the sample, and its consistency determined from time to time throughout the whole series of tests to check any variation. The sample taken from the chest was just sufficient to form the number of sheets required at that particular time. This sample was then diluted to 0.5 per cent consistency for ease in measuring the required amount for the constant-weight sheets. After dilution the requisite amount of the stock was weighed in a tared beaker on a large chemical balance and then diluted to approximately five litres in a fibreware pail.

The apparatus used for forming the test-sheets was a Sheet-Machine made, with a few minor alterations, from the patterns of K. G. Wilen (Wayagamack Pulp and Paper Company) and described by him in the Pulp and Paper Magazine of Canada, January 20th 1921. It consists essentially of two brass castings (Fig. 1, 2 and 3) the adjoining faces of which are machined to a watertight fit. To the interior of the top casting is soldered a sheet brass box, the interior dimensions of which are 8 ins. x 8 ins. with both top and bottom open, the whole forming the deckle-box of the apparatus. The lower casting is fitted with a water outlet (7) to which is connected a quick-opening gate valve (8) and discharge pipe. The interior of the lower casting is slotted to take the screen plate (4) which is made of a quarter-inch accurately planed brass plate with quarter-inch holes drilled and countersunk at half-inch centres. This plate is covered, first by a 14-mesh wire screen and then by a 60-mesh screen, soldered and sewed on so that it lies perfectly flat. The screen plate in this apparatus is easily removable for cleaning and repair, this being an advantage over the original design in which the screen plate was soldered directly to the casting. The deckle-box is fitted with a lever bar (6) which is hinged to the fulcrum bar (5) of the chamber box casting, thus providing an easy means for removing the deckle-box in order to couch the sheet off the wire. The stop (10) holds the deckle-box in the open position and the handle (13) is used to swing the deckle-box open. The total suction head is eight inches (top of screen to centre of discharge pipe) which is ample to form sheets from all but very "slow" stocks.

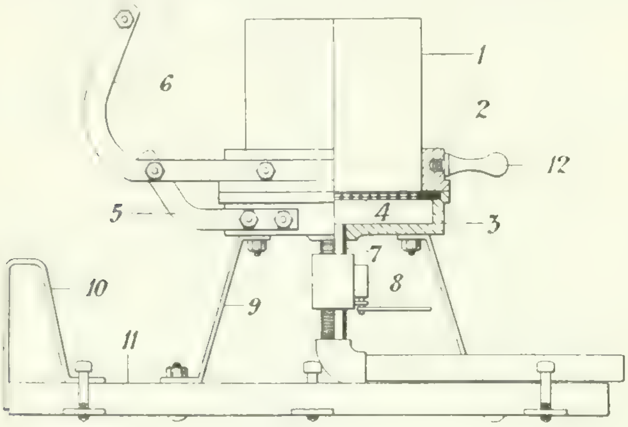

FIG. I

The complete installation is shown in Fig. II. The operation of the machine is as follows:

The diluted stock in the fibreware pail is poured into the deckle-box of the apparatus, care being taken that the discharge and valve is opened and drainage commenced. During drainage the surfaces of the two castings should be watertight. The sheet having been formed on the wire, the deckle-box is thrown back and the sheet couched off on a napless felt using a large wooden rocker as the couching medium. The felt with the adhering sheet is then placed on a brass plate ready for pressing, and the next sheet formed on the machine. In this way the machine produces sheets of constant weight and of very excellent formation.

It was very important that the sheets should contain a constant percentage of moisture at the time of pressing and this was conveniently accomplished in the following way. It was known from previous work that if the felts used for couching had been thoroughly saturated with water and pressed in the letter-press before the sheet was couched on them and that the sheets and felts had then been pressed together in the press for two minutes, that the moisture-content of the sheets would be practically constant at 75 per cent. no matter what their basis-weight might have been. This, then, was a means of obtaining a constant moisture-content for the sheet, and it was found that if the sheets were left between the felts and that both were wrapped in a damp towel, that this moisture-content would remain constant over considerable periods of time. This was determined from the following test.

A stack of eighteen sheets was made and pressed as described above. Sample sheets were taken throughout the pile at different time-intervals and their moisture-content determined. The results obtained are given below:—

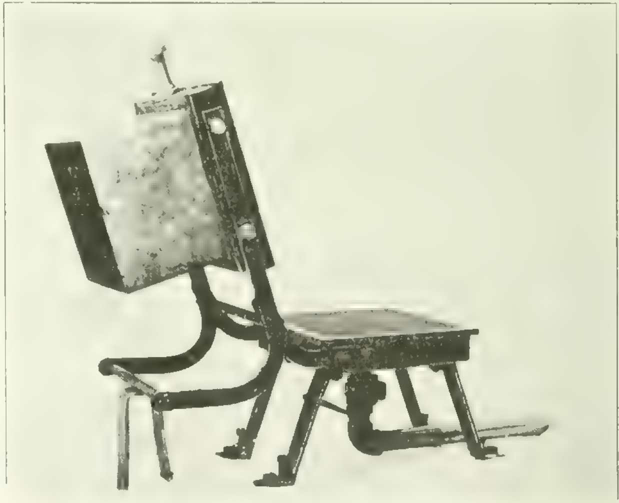

FIG. II

Retention of Moisture in Test-Sheets

Sheet No.	0 hrs.	Sheet No.	3 hrs.	Sheet No.	4 hrs.	Sheet No.	24 hrs.
1	76.2	4	76.7	6	77.1	5	77.4
8	76.9	13	77.8	15	77.7	14	76.9
11	73.5					16	76.6
18	76.4					17	76.6
Aver.	75.75		77.25		77.4		76.87

From these results it is seen that the moisture-content of the sheets can be kept constant over considerable time-intervals by this means. A study of the tables or results of the tests shows how constant this moisture-content remained throughout the whole series.

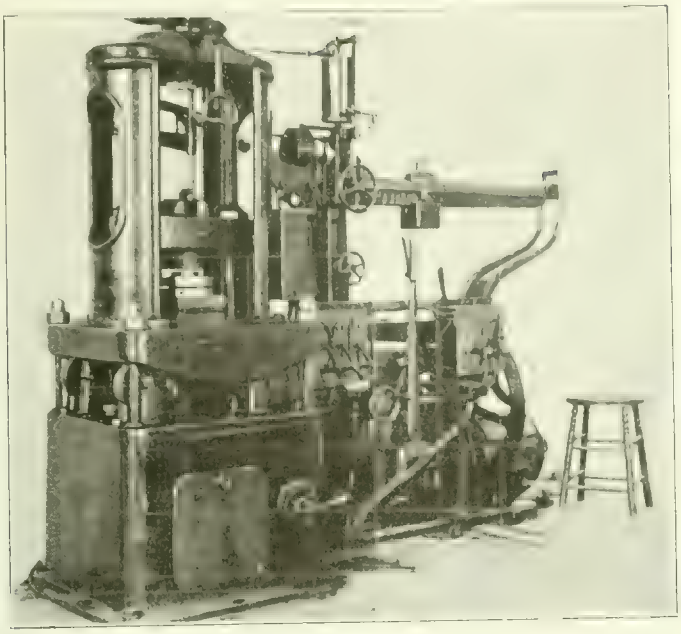

FIG. III

In those tests which required moisture-contents above or below 75 per cent. the procedure had to be altered. In the case of the 90 per cent. sheets referred to later, they wre not pressed at all. The sheet was couched from the wide on a blotting paper laid over the usual felt, and felts, blotting papers and sheets were stacked together and allowed to remain until wanted.

Where a 40 per cent. moisture-content was desired in the sheets they received a double pressing. The first pressing was as usual, except that it was only for one minute, after which time the sheets were replaced between dry blotters and given an additional one minute's pressing. They were then allowed to remain between the damp blotters until used.

In order to obtain a definite pressure per square inch on the sheets when pressed in the tests it was necessary that the pressure should be applied over a definite area of sheet each time and in such a way that the total pressure on the machine would act uniformly over the whole area of the sheet under test. To this end a cast-iron block was made 6 in. x 7 in. x ¾ in. accurately smoothed on each surface. This size was chosen as most convenient both from the point of view of the total pressures required and from the size of the sheet for test purposes. In order to bring the sheet accurately to this size they were cut on a trimming board. Each sheet cut was backed by a sheet of cheap letter-paper so that a clean cut edge would be obtained. In the case of those sheets containing 90 per cent moisture, the sheet together with its blotter were cut in this way, as it was impossible to handle it in any other way.

After cutting, the sheets were accurately weighed on a chemical balance fitted with a specially constructed scale-pan. After weighing the sheet, four blotters, previously cut to size, were placed on each side of it and the stack thus formed placed on the lower testing block of a special machine. The accurately-sized cast-iron block was then placed carefully on the top of the stack and a ball-and-socket plate was placed above this to insure the pressure being evenly distributed over the whole area of the test sheet. The set-up thus formed was centred under the pressure-head of the machine and the pressure applied.

The press used for these tests was a 60,000-pound Riehle Testing Machine in the Strength of Materials Laboratory of McGill University. A description of the mechanics and operation of this machine will not be attempted here; it is sufficient to say that the pressures applied could be very accurately controlled.

Fig. III gives a very good idea of the machine and shows a completed set-up ready for pressing. The duration of the pressure was four minutes in all tests and the rate of loading constant at 0.024 ft. per minute.

After being pressed the sheets were reweighed and placed on the drying-rack to attain air-dryness.

Twelve hours were allowed for the sheets to come to air-dryness after which they were again reweighed. From these three weighings, the moisture-content before pressing, the loss in moisture during pressing and the ream weight were calculated. After the final weighing the sheets were placed in a humidifier where they were allowed to come to a constant moisture-content before they were tested.

This humidifier consisted of a large dessicator in the bottom portion of which was placed a 43.5 per cent. solution of Sulphuric acid. This solution gives a constant relative humidity of 50 per cent. at 25° C. (v. The control of Humidities by Means of Sulphuric Acid Solutions Jour. Ind. Eng. Chem. 1921, p. 326.)

The sheets were allowed to remain in this apparatus for three hours after which they were immediately tested.

This arrangement was designed to eliminate the effect of varying humidities on the strength-tests, and although it is not perfect, yet confidence may be felt that its results were not affected to any great extent by this variable.

Before being placed in the humidity apparatus a strip was ruled diagonally across the sheet to allow of two tensile tests being taken.

Five bursting tests were taken on the remaining portions of the sheet, a Mullen Tester being used. The untouched centre strips were then cut out and replaced

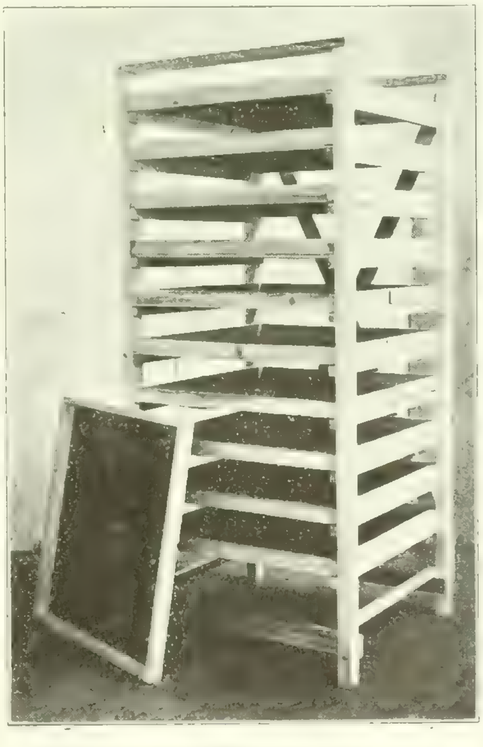

FIG. IV

in another similar humidifier and at the expiration of three hours the strips were used for the determination of the tensile strength. A Schopper Tensile Tester was used for this purpose.

In the earlier portions of the work ten test-sheets were used per point on the curves developed. This gave an average of fifty bursting tests per point on the curve of bursting strengths, and twenty tensile tests per point on the curve of tensile strength. The variation in the different sheets was found to be so small however, that this number was cut down to five. Thus in the great majority of the curves each point represents an average of twenty-five bursting tests and ten tensile tests for their respective curves.

The Mullen Tester was accurately standardized against a Crosby Pressure--Gauge Tester previous to the commencement of the work and from time to time throughout the series. The concentration of the acid in the humidifiers was also checked from time to time, but very little variation was noticed.

DETAILS OF TESTS AND RESULTS

Test 1. — The Determination of the Effect of the Duration of the Load on the Strength

For this determination a heavy basis-weight of sheet was chosen and a low pressure used on the machine. This was done chiefly from the point of view of ease in manipulation, the heavy weight of sheet largely eliminating the small variations in the formation of the sheets and the low pressures being quickly obtained on the machine.

TABLE I

Test No. 1.

Constants—

Rate of Loading, — 0.024 ft. per min.
Basis Weight of Sheet, — 150 lb.
Load, — 100 lb. per sq. in.
Moisture before Pressing, 75 p.c.

Variable —

Duration of Load.

Duration of Load in minutes	Ream Weight	Bursting Strength per cent
0	150.42	27.42
2	152.41	29.6
4	150.62	27.52
6	150.86	27.08
8	150.74	27.44
10	149.69	26.75
20	150.97	27.13

It was seen from these results that the duration of the load had no appreciable effect on the strength so that any convenient time could be chosen as the standard. The zero time on the above table represents the load applied and immediately removed. It must not be overlooked, however, that this represents some minutes due to the time taken by the machine in applying and removing the load. The other times given represent the lengths of time during which the loads were held constant. Four minutes was chosen as the standard time during which all loads should be held constant throughout the tests. The results of this test are shown graphically in Figure V.

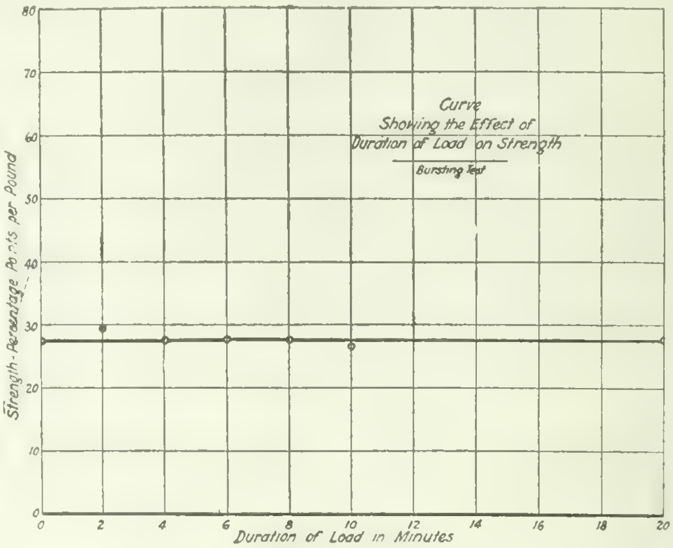

FIG. V

TEST No. 2

The Determination of the Effect of Pressure on Strength

This test was carried out on five different basis-weights of sheet, namely, 45 lb., 75 lb., 94 lb., 112.5 lb., and 150 lb. When working with the 112.5 lb., sheets, (the first series carried out) the pressures were increased in increments of 100 pounds per square inch. In the lower pressures increments of 50 pounds per square inch were used. In the other series, however, increments of 200 pounds per square inch were used, as it was only necessary to establish the manner in which these latter curves varied from that of the first series. It was though that there would be two limiting values to the weights of sheet used, the upper limit being dependent upon the effect of the pressure on the strength, and the lower limit depending upon the formation of the sheet. The results of each series in this test are tabulated separately below and the curves thus established are shown in Figues VI-X.

The results of these tests are shown in graphical form in the following figures:—

Fig. VI	Curves Showing the Effect of Pressure on Strength for Different Ream-Weights of Sheet (Tensile Tests).
Fig. VII	Curves Showing the Effect of Pressure on on Strength for Different Pressures Sheet (Tensile Tests.)
Fig. VIII	Curves Showing the Effect of Ream-Weight on Strength for Different Pressure (Bursting Tests.)

TABLE II

Test No. 2. — The Determination of the Effect of the Pressure Applied on the Strength.

Constants—

Rate of Loading, — 0.024 ft. per min.
Duration of Load, — 4 mins.
Pressure Applied.
Moisture before Pressing, — 75 p.c.

Variables —
Basis Weight.

Press Applied lb. per sq. in.	Moisture before Pressing p.c.	Moisture after Pressing p.c.	Moisture extracted p.c.	Thickness Basis Weight		Bursting Strength p. c. points per lb.	Tensile Strength Breaking Length Yards
Series (a) Basis-Weight 45 lbs.							
0	76.0	....	....	43	.008	28.2	30.04
200	74.6	29.6	60.3	45	.0046	49.2	47.00
400	76.8	28.6	62.7	47	.0045	53.9	64.15
600	75.7	26.7	64.8	46	.0044	57.3	67.5
800	77.0	23.3	68.5	44	.004	59.1	70.2
1000	78.1	24.1	69.2	44	.004	62.5	73.2
1400	77.8	22.0	71.7	44.5	.004	64.5	76.6
Series (b) Basis-Weight 75 lbs.							
0	....	....	....	74.5	.014	26.7	27.30
0	....	....	....	74.5	.014	29.1	27.28
200	74.2	33.4	55.9	74.5	.007	46.5	59.25
400	76.6	31.3	59.2	72.0	.0065	52.7	65.95
600	74.7	29.6	60.4	73.5	.0063	56.5	68.5
800	75.6	28.2	62.7	74.5	.0062	57.6	72.05
1000	78.8	29.5	62.8	74.0	.006	60.0	62.9
1400	75.8	26.4	65.2	77.5	.006	63.1	79.6
2000				74.0	.0055	73.4	86.9
Series (c) Basis-Weight 94 lbs.							
0	76.3	....	....	93.0	.0175	23.9	24.76
200	74.7	34.8	53.45	95.5	.009	40.2	49.0
400	75.2	32.3	57.1	94.0	.0082	48.2	55.35
600	76.2	31.2	59.1	94.0	.0078	50.2	60.7
800	74.5	28.4	61.9	95.0	.0075	55.2	63.2
1000	75.4	28.8	61.8	94.0	.0072	57.7	64.25
1400	75.7	28.7	62.1	94.0	.0072	60.6	69.4
Series (d) Basis-Weight 112.5 lbs.							
0	72.58	....	....	113.0	.020	22.19	23.10
50	77.06	40.7	....	108.0	.012	27.1	26.93
100	75.7	35.6	....	108.0	.011	30.33	32.12
200	75.4	33.7	55.3	106.0	.010	34.23	37.25
300	76.51	32.56	....	113.0	.0095	38.04	45.05
400	77.01	33.1	57.0	112.0	.0095	39.5	48.05
500	73.9	29.7	....	108.0	.0085	43.4	53.32
600	74.2	30.4	59.1	113.5	.009	45.2	56.48
700	75.5	30.6	....	112.5	.0088	48.1	59.8
1000	77.6	32.8	56.5	110.0	.009	54.8	62.10
1400	77.6	32.3	57.4	112	.0085	57.6	64.6
2000	....	....	....	112.0	.008	70.8	68.2
Series (e) Basis-Weight 150 lbs.							
0	75.7	....	....	147	.026	20.3	18.62
200	75.45	39.92	47.05	148	.014	33.7	33.77
400	76.0	39.6	47.9	148	.013	38.2	36.00
600	75.6	36.5	51.7	147.5	.012	43.3	44.30
800	75.9	35.5	53.2	148	.0115	45.6	49.15
1000	75.1	34.8	53.7	149	.011	48.4	51.95
1400	76.2	35.0	54.1	150	.011	52.4	55.5
2000	....	....	....	148	.01	66.2	62.3

Fig. IX. Curves showing Effect of Pressure on Thickness of Different Weights of Sheet.

Fig. X Curves showing the Effect of Pressure on Moisture-Content for Different Ream-Weights of Sheet.

In studying these results it is seen that increasing the pressure applied increases the strength of the test-sheet, (Figs. VI and VII). This increase is strength is most marked at the lower pressures and on the lighter weights of sheet. It falls off with increased pressures

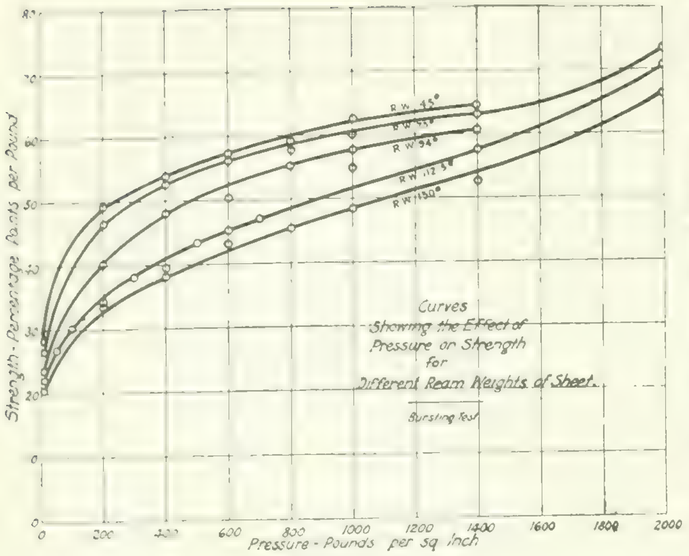

FIG. VI

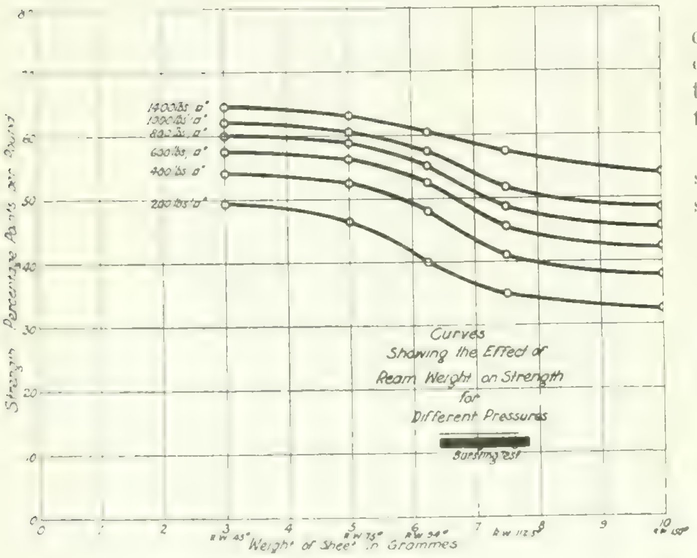

FIG. VIII

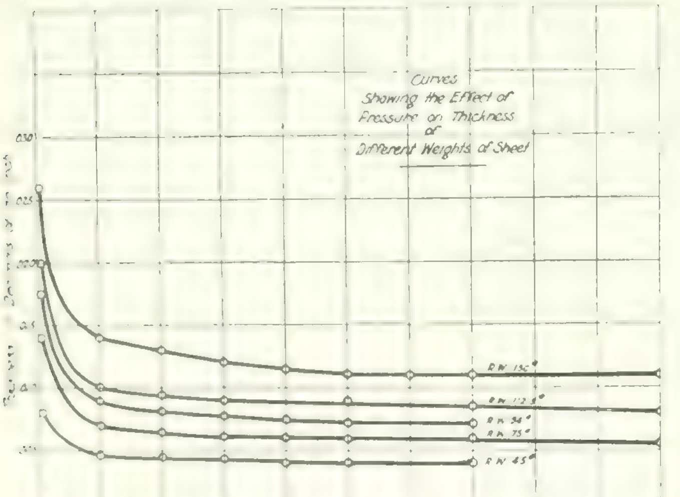

FIG. IX

and heavier basis-weights of sheet. This increase is still noticeable at very high pressures, the maximum pressures used in these tests (one ton per square inch) still showing this condition plainly.

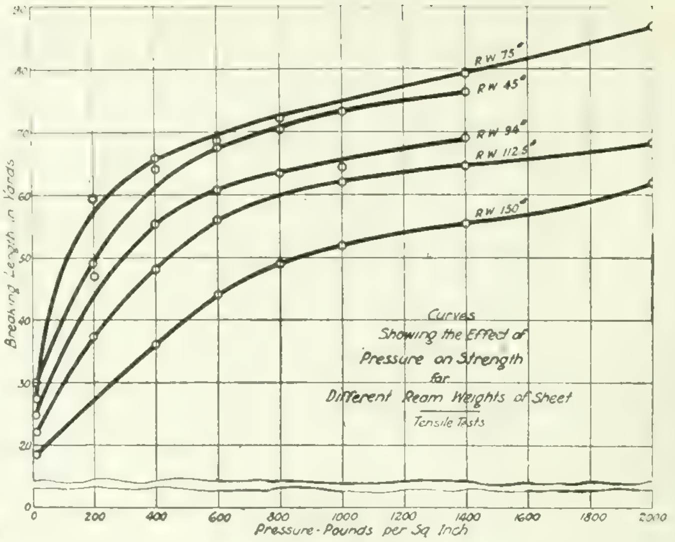

FIG. VII

The decrease in strength as the ream weight is increased, for any constant pressure used, is shown very clearly in Fig. VIII. The effect of this variable seems to be practically constant for all the pressures used in these tests.

The effect of the pressure on the thickness of the sheet is much what would be expected (Fig. IX) and seems to be constant for all the different weights of sheet used.

The loss of moisture due to the pressing (Fig. X) varies inversely with the basis-weight of the sheet. This effect, however, is constant for any given pressure applied.

Two points of particular value are showing in these results, Uniform pressures must be applied to the test-sheets if uniform results are to be obtained from the tests and light-weight test-sheets must be used if maximum strength-figures are desired. The best weight of test-sheet to be used, both from the point of view of ease and reliability in formation, and suitability for testing purposes, is the 75 pound sheet.

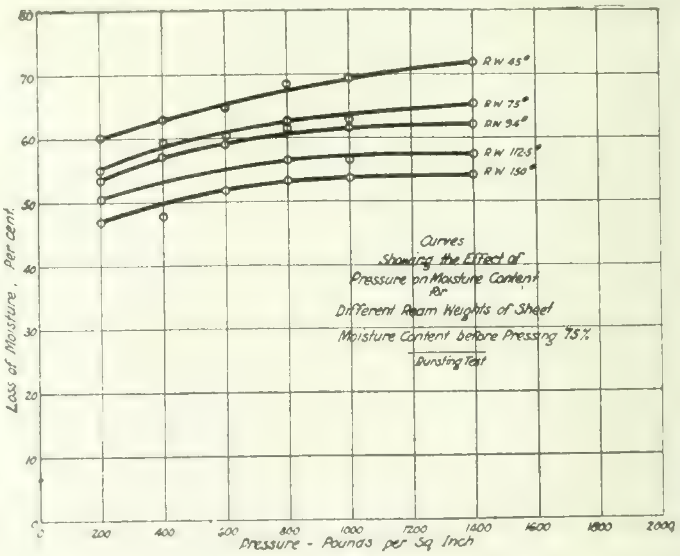

FIG. X

It seems probable that the moisture-content of the sheet at the time of pressing would have a decided effect on the results obtained, so that in order to establish this point Test No. 3 was carried out.

Test No. 3.—The Determination of the Effect of the Moisture-Content before pressing on the Strength developed under different pressures.

Test sheets of basis weight of 75 lb. were used in this test. The effect of variations in pressures over the same range as previously used was determined on test-sheets containing moisture-contents of 90 per cent., 75 per cent., and 40 per cent., previous to being pressed.

The results of these three series are given in Table III.

TABLE III

Test No. 3 — The Determination of the Effect of the Moisture-Content Before Pressing on the Strength developed under different Pressures.

Constants—
Rate of Loading. — 0.024 ft. per min.
Duration of Load. — 4 mins.
Basis-Weight. — 75 lbs.

Variables-
Moisture-Content before Pressing.
Pressure applied.

Press. lb. per sq. in.	Moisture after pressing p. c	Moisture before pressing p. c.	Moisture extracted p. c.	Basis Weight	Thickness	Bursting Strength p. c. points per lb	Tensile Strength Breaking Length in Yards
Series (a) Moisture before Pressing 90 p.c.							
0	....	....	....	74	.02	14.8	16.13
200	92.3	52.9	42.7	74.5	.0075	44.0	54.40
400	92.0	47.0	48.9	73.0	.0068	52.1	60.3
600	90.8	42.8	52.9	75.0	.006	55.4	63.3
800	91.2	40.8	55.3	73.5	.0058	59.6	66.61
1000	91.3	38.6	57.7	74.0	.0055	61.1	71.0
1400	....	....	....	75.5	....	67.3	77.7
Series (b) Moisture before Pressing 75 p.c.							
0	....	....	....	74.0	.014	26.7	27.3
200	74.3	33.4	55.0	73.5	.007	46.5	59.25
400	76.6	31.3	59.2	71.5	.0065	52.7	65.95
600	74.7	29.6	60.4	74.0	.0062	56.5	68.5
800	75.6	28.2	62.7	74.5	.0062	57.6	72.05
1000	78.8	29.5	62.8	74.5	.006	60.0	62.9
1400	75.8	26.4	65.2	77.5	.006	63.1	79.6
2000	....	....	....	74.0	.0055	73.4	86.9
Series (c) Moisture before pressing 40 p.c.							
0	40.8	....	....	75.0	.009	36.8	43.85
200	46.5	19.1	59.0	74.5	.007	38.9	49.65
400	38.9	11.7	70.0	74.0	.006	40.0	51.9
600	39.8	10.8	72.9	75.0	.0055	41.0	55.46
800	42.1	10.9	74.1	74.5	.0052	42.0	57.15
1000	44.7	12.9	71.2	75.0	.0052	45.0	60.85

These results are shown in the form of curves.

Fig. XI Curves showing the effect of Moisture-Content before pressing on strength developed under different pressures (Bursting Tests.)

Fig. XII Curves showing the effect of Moisture-Content before pressing on the strength developed under different pressures (Tensile Tests.)

Fig. XIII Curves showing the effect of pressure on Moisture-Content for different original Moisture-Contents.

It may be said, from an examination of Figs. XI and XII that a moisture-content of 75 per cent before pressing is an optimum. The crossing of the 75 per cent and the 95 per cent curves in Fig. XI is rather hard to understand, especially when compared to Fig. XII. Unfortunately there was not enough time to check these two curves to clear the matter up. From the results of the tensile tests it seems reasonable to suppose that the curves should occupy the same relative positions in the bursting tests thus making 75 per cent the optimum condition.

That the 90 per cent sheets have a tendency to act rather erratically under the pressures is showing in Fig. XIII, where it is seen that the per cent. loss in moisture increases with increase in pressure up to a certain point, after which it starts to decrease.

SUMMARY

It has been shown that in the pressing of test sheets in the strength-testing of pulps:

1 The strength developed is independent of the length of time the pressure is applied (within the limits of the speed of the machine used.)

(2) The strength increases with increase of pressure applied, other conditions being constant.

3 This increase in strength is more marked at the lower pressures used and on the lighter basis-weights of sheet.

4 The strength varies inversely with the basis-weight, other conditions being constant.

5 The strength varies independently of the moisture-content before pressing. For the moisture contents used 75 per cent was found to be the optimum.

CONCLUSIONS

From the results of these series of tests it seems imperative that the basis-weight of the test-sheets used and the pressures applied in their formation should be accurately specified in any standard method for the testing of pulp for strength.

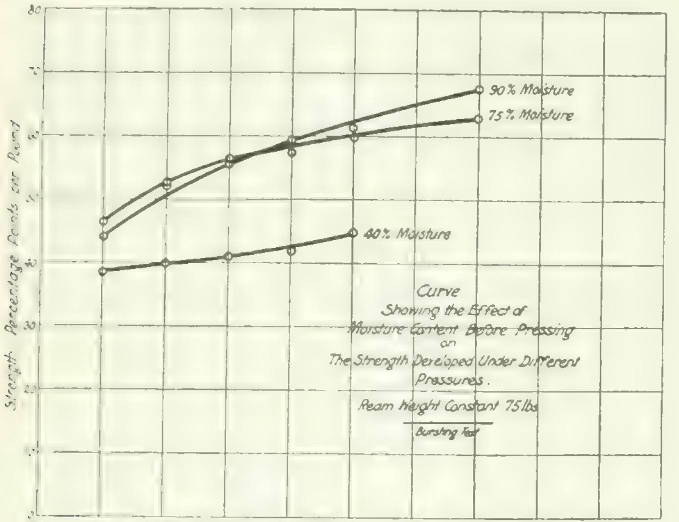

FIG. XI

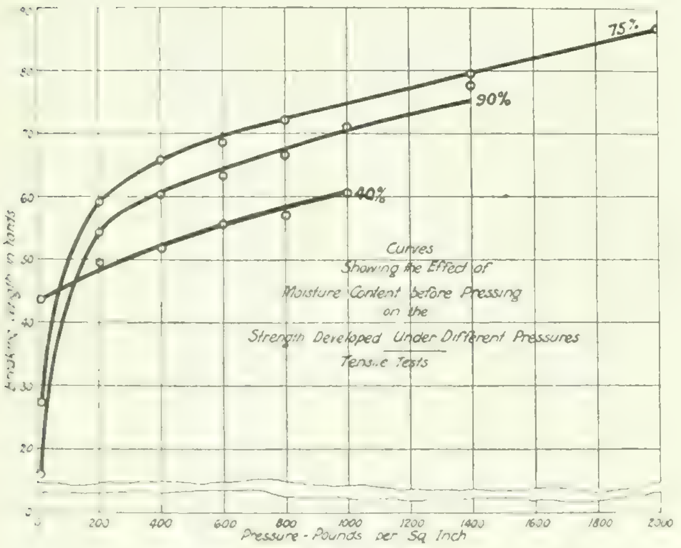

FIG. XII

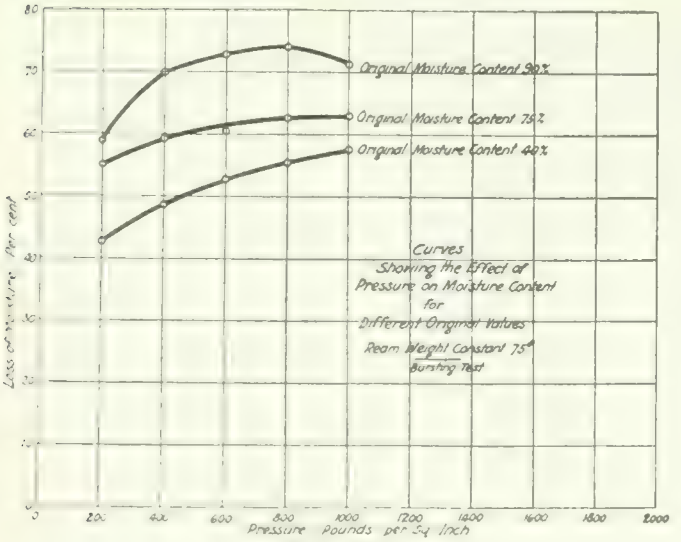

FIG. XIII

SULPHATE MILL BY-PRODUCTS

B. T. McBAIN

Director of Mfg., Nakoosa-Edwards Paper Company

Waste to be used! Where a ton of pulp is made, almost two tons of waste results in the sulphate pulp business, when gross weight of wood and sludge waste are considered as against net weight of pulp produced.

Five sulphate mill operators of the States of Minnesota and Wisconsin have formed an Association for research work to the end that all valuable material in what is now waste from their plants be reclaimed in the form of by-products and markets found for same.

Arrangements have about been completed with one of the foremost Chemical Engineers of the United States to superintend this research work and while no definite plan has yet been outlined, suffice it to say that the men behind the idea are among the leading paper and pulp manufacturers of the States named and if it is in the cards, the game will be won. This is another place where co-operation between the technical man and the practical man can work greatly to the adavntage of the paper and pulp industry as a whole.

There are many chemicals known to be possible of saving, yet to put it as one chemical engineer spoke his mind, "I think sulphate pulp just happened. I don't think anyone every worked it out scientifically. I believe there is much to be learned and believe there are greater possibilities in the by-products than in the pulp itself, than there are in the by-products of the packing industry."

This is another move to save waste. When all the waste in the industry is saved, or arrangements to that end perfected, I will start harping on another tune.

The mills so far interested are:

Minnesota and Ontario Paper Company, International Falls, Minn.
Marinette and Menominee Paper Company, Oconto Falls, Wis.
Wausau Sulphate Fibre Company, Mosinee, Wis.
John Strange Paper Company, McDill, Wis.
Nekoosa-Edwards Paper Company, Nekoosa, Wis.

CELLULOSE BIBLIOGRAPHIES

Dr. C. J. West, Chairman of the Committee on Bibliographies of the Technical Association of the Pulp and Paper Industry has kindly offered to act for the Cellulose Division of the American Chemical Society as a receiving center for bibliographies relating to any branch of cellulose chemistry. It is hoped that all of those having such bibliographies will send a copy to Dr. West, c. o. National Research Council, 1701 Massachusetts Avenue, N. W., Washington, D. C. Dr. West has kindly offered to assemble all material received and make it available to anyone interested. It is hoped that a large amount of duplication of effort can be avoided in this way

G. J. Esselen, Jr., Chairman, Cellulose Division.
American Chemical Society

Put the message in print to-day, for to-morrow the thought is gone.

The mind in greatest fault must lie
Which from itsef can never fly.

—Horace

Continued from page 118

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Stock Saving--With And Without Save-Alls

E. J. TRIMBEY

(Trimbey Machine Works, Glens Falls, N. Y.)

Among the stock losses of a paper mill is the good fibre which escapes in the so-called "white water." In extreme cases this may amount to ten per cent., or more, of the total production, and unlike the losses from the barkers or from screenings, it is more or less disguised and hidden and due to its dilution and to the fact that it generally finds its way to the river through covered drains or sewers the extent of the losses from this source is many times unsuspected by the owners.

It is easy to say that valuable raw material should not be wasted and at the same time it would seem unnecessary to urge that steps should be taken to reduce losses to the lowest practical point, but many times it has been difficult to convince the owners that these losses existed or could be reduced at small expense. When approached on this subject an elderly President once told the writer,—"Young man! I was making paper before you were born! How can you come into my mill and show ME how to save stock?"

Mrs. Brown may admit that Willie Jones is a bad boy but she knows that her Johnny has none of his bad habits. In the same way, any Superintendent will admit that there are white water losses in the industry as a whole, and he's certain that his friends up the river are wasting tons of good stock,—he knows this because it plugs up his filters. He probably doesn't know what comes to the filters of the mills downstream and with deepest sincerity will assure you that nothing of that sort occurs in HIS mill, he knows what to do, and besides he is fully equipped with Save-alls,—and lulled into false security by the name he does not check up their operation or make a survey of the sewers to find out how much good fibre is going through them into the river. Had these machines been called "Save-Forty-Per-Centers" rather than "Save-ALLS" more attention might be given to the richness of the white water going to them. Then too, as is so often the case, Save-alls once installed are more or less forgotten by the mill owners. The logical location for a Save-all from the standpoint of power consumption is in the basement where its supply can come by gravity, and the old adage "Out of sight, out of mind" applies to Save-alls as well as to persons. While their continuous and efficient operation is necessary for the economical operation of the mill it is not necessary for the running of the paper machine; if it was, and if when the belt ran off or the wire facing tore off, the paper machine should stop they would receive more careful attention than they generally do.

We do not wish to criticize Save-alls or their use, for they have their place and a very important one in the economical operation of every pulp and paper mill; but there are other and better ways of meeting the "white water" problem than by the indiscriminate use of Save-alls. They should be considered as watch-dogs guarding against the loss of stock, and when the save-all is rolling off a thick sheet of pulp, instead of regarding this is an indicator of efficient mill operation it should be taken as a signal that somewhere back in the stock handling system leakage and loss are occurring; for, as a rule, high efficency of the save-alls means low efficiency of the white water and stock handling systems in the mill.

In most mills water costs nothing except for pumping or comes from a gravity supply. Plenty of fresh water is needed, but generally more than a plenty is used. A stock handling system is after all like a pint cup, it holds so much and no more. The tanks are larger than pint cups to be sure, but sooner or later they become full and then, for every gallon of fresh water that is added to the system, a gallon of water must leave the system, and in leaving takes its toll in the form of filler or fibres.

No wire covered save-all and no settling tank removes all the stock from the water coming to it, especially in the case of the larger newsprint mills where the volume of water to be handled is so great and where the pulp supply is largely, if not entirely, in the form of "soft stock" requiring practically no thinning before going to the machine chest.

One way to attack the problem of reducing the white water losses is to take the mill as you find it, accept the volume and richness of the excess water as a necessary evil, choose a good type of Save-all, and install enough of them to handle the entire flow; but do not stop with the installation. See that they are all kept in repair, that the deckle straps are kept in place, the facings are changed when torn or worn out, and by frequent comparisons of the richness of their supply and their discharge, keep them at their best efficiency; it will be low enough at best, and you can never hope to eliminate the loss entirely as long as you find need for save-alls. As long as water goes through the cylinder, or out the settling tank overflow you may be assured it will take its toll of fibre and filler along with it.

Another way is to begin at the beginning, and use the proverbial "ounce of prevention." Go through the mill and reduce the use of fresh water to a minimum. Do not cripple operations by trying to carry this too far at first, simply shut off the unnecessary use of fresh water. It may seem easier to stick the end of the hose into the pit then to shut off the valve but let us see what that hose stream will cost you in fibre loss in one year. The 50 gallons per minute which it adds means that an additional 72,000 gallons per day leaves the save-alls, and a conservative estimate of the average amount of stock in this water leaving the save-alls is 2 lbs. per 1000 gallons, or 144 pounds per day, worth about $500 per year at $25 per ton.

Isn't it worth while to shut off hose streams at $500 per year each? This looks too good to be true, but don't call it the harmless ravings of a man who never saw a save-all or a white water sewer, try it for yourself; stick a healthy one-inch hose stream into a barrel and see if it doesn't fill it in about a minute; then filter an average sample of the water leaving your save-alls and don't be surprised if instead 2 pounds per 1000 gallons it tests 4 or even 6.

When you have reduced your fresh water to a minimum, the next step is to keep all unnecessary stock out of your white water system. For example,—go through the pulp mill and test the discharge water from EACH thickener. This does not necessarily mean a chemical analysis of each sample. Have a supply of 2-oz. bottles numbered to correspond to the numbers of the thickeners; fill each with the white water from its thickener and set them aside for an hour to settle. If the deckles or packing straps on any have slipped out of place at the bottom, if a wire facing is cracked, or if for any other cause stock is leaking into the white water compartment it is at once shown up by the increased amount of stock in the water from that particular machine, which can be shut down and repaired. Without this simple test it might have gone on unnoticed for several days as even very rich white water from one thickener would hardly be noticeable when mixed with a dozen or more which were all right. To be sure, the save-alls, if kept in good repair would have caught part of it, but by stopping the leak at its source you have made a 100% saving on that particular item and besides have relieved the stock handling system of recirculating that amount of stock.

Generally the white water from ground wood presses is much thinner than from thickeners, don't mix the two but use all of the richer water you can back in the system and send the thinner water to the save-alls.

On the paper machines, don't mix the tray water or water from the wire with that from the suction boxes. You'll find the latter only about 30% as rich as the former. You can't use all of both, and the tray or wire water alone is not enough (unless you are running without trays and are using an excessive amount of shower water) so arrange to use all the richer water, make up the deficiency with suction water and send the balance of the suction water to the save-alls.

Watch out for leaks of stock into your white water system, or for leaks of stock or rich white water into your save-alls supply system. For example, if you have a bad edge on the sheet set the "squirt" just far enough to trim this and give a good edge, don't set it in to cut off an inch of the sheet to follow around beneath the couch into the white water pit. If you wash felts "on the fly" without shutting the stock off the wire, see that this thick stock is dumped back to the chest and not allowed to lie in the pit to be gradually broken up by the shower water and carried to the save-alls; they may recover 40% to 60% of it for you, but every pound that you put back into the chest means 100% recovery.

A Measuring System for white water losses is of the greatest value. By placing a weir in the white water sewer leaving the save-alls a record of the flow can be obtained by the use of a Liquid Level Recorder, and either by means of an automatic Sampler or samples dipped at hourly intervals by the save-all attendant, a cleaner or some other employee in that part of the mill, and stored in a container, a sample can be secured which will represent an average for the 24 hours. This sample is filtered and weighed by the Laboratory and together with the volume gives a measure of the total loss for the day. Plotting this loss from day to day gives an incentive to reduce it and if leaks occur and the losses begin to mount higher an investigation can be made at once to determine the cause.

Such a measuring system gives the only means of knowing what this loss amounts to from day to day, as no dependance can be placed on the book-figures showing the pounds of pulp used per ton of paper made. No one knows how much pulp is used where it is handled as soft stock. A "cord" may be a "cord," but the yield of pulp from it at different mills or in the same mill at different times, remains one of the unknown quantities of paper making, and not until all the stock used is metered can we hope to have even approximate figures.

The sewer loss figures are positive. If you are measuring all the sewers and find this loss has increased by 1%, you know that it is an actual and not a fictitious loss, and search out the cause for it. Without such a measuring system many a heavy loss has been hidden by "large" cords of wood which made the book-figures show a low percentage of stock used per pound of paper made.

As we said before,—Save-alls are needed; but don't depend entirely upon their use,—

Eliminate all unnecessary fresh water from the entire stock handling system by shutting off hose, removing unnecessary showers and using white water in place of fresh water wherever possible.

Where you are now using white water, look into the matter and see if you are using the richest supply available.

Check over your stock handling and white water systems point by point to find the leaks, and do this frequently.

Keep all unnecessary stock or rich white water out of the white water system.

When you have reduced both the volume and the fibre content of the excess white water to a minimum, then,—and not until then, rely upon your save-alls to reclaim as much more as possible, by having enough to handle the flow, run them slowly, keep them in good repair and by all means install a white water loss measuring system to give you a record of the losses from day to day.

The Manufacture of Printing Ink

And the Relation of Ink Properties to Printing of all Grades

By B. G. RANSOM, Ault & Wiborg Co., Montreal

The modern ink manufacturing concern to-day, manufactures ink for use on many surfaces other than paper, although ink used on other material than paper is comparatively not important in regard to volume consumed. Considerable ink is used in the printing of cloth, such as bags, made of cotton, jute, banners and streamers, in lithographing on metal, etc., in which I understand this gathering is not interested. The printing processes in which ink is used are as follows:—

Letter Press printing, that is, impressions from raised surfaces, such as job printing, book and news-paper printing; lithographing, or printing on level surfaces, the principle of which process is that water will not mix with oil or grease. Intaglio printing, or printing from depressed surfaces, as copper-plate engravings or postage stamps and bank notes and the rotogravure sections of the modern daily papers and magazine inserts, which is becoming of very great importance. This process is now being installed by news-papers throughout the world to print their magazine and illustrated supplements. It will also play a greater part in job and catalogue prining as time goes on.

I will first take up the general manufacture of prining from the ink chemist's point of view, and I am indebted to Mr. Taylor W. Anstead, Dry Color Department, of the Ault & Wiborg Co., of Cincinnati for this data.

Printing ink may be said to consist primarily of varnish and pigment, together with a considerable measure of applied research and technical experience. These factors are intimately related, since the quality and properties of the finished ink are largely determined by the fineness, shade, strength and body of the raw materials Although actual manufacturing experience has shown that for efficient production the varnish, pigment and ink-making should be conducted in separate departments, it is nevertheless essential that the efforts of these departments be closely co-ordinated and frequent consultation should be held, in order that the varnish and pigment makers thoroughly understand and properly interpret the requirements of the ink manufacturer.

It will not be possible within the limits of the present article to present an exhaustive treatment of all the manufacturing requirements of the printing-ink industry. An effort will be made, however, to refer briefly to those phases of its technology of most interest to the chemist and chemical engineer and to indicate the line along which the industry is developing. This treament naturally falls under three heads, namely, varnish, pigment and finished printing-ink.

Printing Ink Varnishes

The manufacture of varnishes for ink-making involves but few features that are not common to the varnish industry. From the chemical view-point, a deal or interest attaches to the various varnish oils, principal among which are linseed, chinawood oil or tung oil, soya bean oil, rosin oil, perilla oil and various mineral oils. Linseed oil is by far the most important for varnish making, because of its superior drying qualities, the case with which it can be "bodied" or "heavied", the better working qualities it gives to the ink, and its good color and pleasant odor.

Many procedures have been outlined by various authorities for determining the quality of linseed oil by means of its specific gravity, iodine number, acid number, etc. But it has been found through practice that these figures are not worth much to the ink maker, and their determination is scarcely worth his while. He has found it most satisfactory to make varnish in the laboratory by a standard method and then to test the finished varnish for the properties required of it. Exposure in a drying oven for two hours gives its drying value. The varnish should have "flow" and not be "livery"; that is, it should follow the finger after it is dipped into the varnish and not be jelly-like. The oil should give a varnish of clear color, with a pleasant odor, and free from sediment.

Chinawood oil has but a very limited application in the printing-ink industry. Its use is confined to applications in which unusually rapid drying is essential.

Soya bean oil has come to be regarded as an important substitute for linseed oil in certain of the industry's requirements. It is used either alone or in mixtures with linseed oil, especially at times when the price of linseed oil is exceedingly high. Although it is the best of the semi-drying oils, it cannot be said to be as satisfactory as linseed as a varnish oil.

Only recently has perilla oil become a factor in the ink industry. It is imported from China, is practically odorless and has a good color. It has most of the good qualities of linseed oil, as far as drying and thickening are concerned. The great disadvantage to its use has been the fact that shipments are not uniform in character and therefore the quality of the oil is not absolutely dependable.

Rosin oil is obtained by the destructive distillation of ordinary rosin and is marked as first, second, third and fourth run rosin oil. The oil ordinarily used for varnish-making is the first run. Varnishes made from it cannot, of course be used on bright pigments, but rosin oil makes excellent varnishes for black inks, especially when treated to obtain drying qualities.

Mineral oils of various kinds are used as varnishes in very cheap inks where a porous paper stock is used. They also find application as thinners in higher-grade inks in connection with rosin and linseed oils.

Treating the Oils

Linseed oil, as such, when ground with a pigment would give a sloppy ink; it must therefore be thickened or bodied to give an ink of satisfactory working qualities. The raw linseed oil, which has about the fluidity of water, can be bodied through various intermediate stages to the consistency of molasses taffy. The various bodies are numbered as a rule from 0000 for the lightest to No. 7 for the heaviest of the boiled or blown oils. In the boiling process the linseed oil is heated in a copper kettle over a gas, coal or oil fire, the temperature and time varying with the grade to be produced.

In blowing linseed oil, air is bubbled through the oil until the desired body is obtained. The advantage claimed for blown oils is a lower acid value and therefore better drying qualities. However, this better drying is offset by the fact that blown oils do not mix as easily with other oils and varnishes, the color is not so good, and they will not lithograph as well as the varnishes made by external heating.

In making rosin oil varnishes, the first run oil is used because it is of a heavier body at the start and the varnishes made from it have greater drying qualities. Rosin oil is heated and then about 1 per cent of its free rosin acids are neutralized with lime. If more is neutralized the varnish dries too rapidly and is likely to form an oxidized film or skin. A more uniform drying can be obtained by adding a small quantity of some drier such for example as about 2 per cent of lead and manganese resinates.

Driers and Retarders

A drier, it will be recalled, is a substance which when added to a varnish acts as an oxygen carrier and thus accelerates the oxidation of the varnish and causes it to dry.

In contrast to the driers there are substances which actually prevent drying. Among these the most notable is selenium, the presence of a small amount of which retards drying to an extent out of all proportion to the quantity present. Recent experiments would seem to indicate that to a lesser extent the presence of sulphur in carbon blacks will retard their drying. Blacks which are free from sulphur dry much more readily than blacks which contain that element. It is a well-known fact that pigments made from basic dyes are notoriously poor driers and excess drier has to be added to the inks.

The driers in most common use are the linoleate, resinate and tungstate of lead, the borate and resinate of manganese, and the acetate and resinate of cobalt.

Each metallic drier may be said to have a different use, depending upon its drying qualities. Cobalt compounds are the best dried. Their action is to dry quickly on the surface, giving a hard film. It is surprising how small a quantity of cobalt, calculated as the metal, is necessary. One hundredth of one per cent will often dry an ink satisfactorily. Manganese treated oil dries peculiarly in that the ink remains raw for some time and then suddenly hardens. Lead treated oil dries gradually and ink in which it is used is inclined to be rather sticky. Manganese and lead together, however, will give a well-balanced drying effect.

Few people realize that the drying of an ink is not independent of the paper stock on which the ink is to be used, the oxidation which occurs is not only affected by the metallic driers, but also, either positively or negatively, by the fillers and pigments used in making the paper. Too often the ink-maker is kept in ignorance of the kind of paper on which his ink is to be used. He tries to meet an average condition and frequently has his ink returned because it has not dried properly, when the fault lies in the paper.

Ink Pigments

In the manufacture of printing-inks two general classes of pigments are used (exclusive of carbon blacks) — namely, the natural or earth colors and the artificial colors. To the former class belong the ochres, umbers and siennas; to the latter class, the organic lakes, the chrome yellows and the iron blues.

The natural colors are noted for their fastness to light and for their resistance to alkalis, acids and bleaches. However, they are not easily worked, do not cover well, have a tendency to fill up the plates, and have little tinctorial value. On the other hand, the manufactured colors yield an infinite variety of shades, have great color strength and work well in varnish. Many of them, too, are comparatively fast to light and to the action of acids and alkalis.

Organic Color Lakes

In making an organic lake the manufacturer attempts to render the dye as insoluble as possible. This is done by treating the soluble dye with barium or calcium chloride, thereby forming the barium or calcium lakes of the dye, which in nearly all cases are insoluble. Or in place of the soluble dye an insoluble product may be formed by the combination of intermediates such as the formation of the para reds by the coupling of diazotized paranitraniline with betanapthol.

Most organic lakes have too high a tinctorial value to be used as such. Besides, they do not give as good working qualities as when diluted with an inert base. The 100 per cent color lakes are known as toners and the diluted colors are referred to in terms of the percentage of pure color present.

Bases for Color Lakes

The usual bases for printing-ink colors, are blancfixe, aluminum hydrates or a mixture of the two. Blanc-fixe is used as the base for the cheaper colors designed for poster or bag inks. The artificial barium sulphate is preferred to the naturally occurring barytes, which is very rarely used in printing-inks because it is gritty. Blanc-fixe is of two kinds, the precipitated and the by-product material. Experience has shown that the by-product blanc-fixe is usually unsuited for lithographic inks because of its action with water. The ink from such a base becomes pasty because of its water absorption or, in exaggerated cases, it may literally "go to pieces" and break down entirely. Precipitated blanc-fixe should be white, neutral and free from sulphides. Sulphides very often give trouble in connection with copper plates or when the blanc-fixe is mixed with a lead chromate yellow.

Aluminum hydrate is very transparent and is therefore suitable for process inks where one color must be seen through the color above it. Great care must be exercised in the manufacture of aluminum hydrates for color lakes. It is ordinarily prepared from aluminum sulphate and soda ash. The former should be free from iron, since ferric hydroxide gives the aluminum hydrate a dirty, brownish color. Precipitation is best effected in dilute solutions, 10 per cent or less, because too great a concentration is likely to give a product which dries out too much. The base should be carefully washed to free it from soluble sulphates, as these are likely to give trouble in lakes precipitated with barium chloride where the presence of barium sulphate would throw the color toward the semi-transparent side. Cases have been known of batches of color made from the barium lake of litho red where the addition of poorly washed aluminum hydrate has caused the lake to lose its bluish shade and take on a yellower shade, due to the barium leaving the dye and combining with the free sulphate in the hydrate.

A base which is quite popular is a mixture of blanc-fixe and aluminum hydrate. In this base, the advantage of the comparatively low cost of the blanc-fixe is combined with the high finish and luster given by the aluminum hydrate.

Para and Toluidine Reds

The red organic lakes present the greatest variation in color from the yellow-red, almost orange shade, of a light para red to the deep blue shade of the eosines. The good old standby of the ink-maker, as of the painter, is paranitraniline red. The light shade is produced by combining diazotized paranitraniline with beta-napthol. The deep shade is produced — and here is one of Nature's mysteries — by the addition of about 5 per cent of beta-napthol monosulphonic acid F to the beta. Paranitraniline gives nothing like the same shade with F acid alone; the shade results only when the color is heated and furthermore, the addition of too much F acid is likely to throw the color over to the brown shade and cause it to lose its blue tone entirely.

The para reds are popular because of their good working qualities, the comparatively low cost of the intermediates entering into their production, their relative fastness to light and to the action of acids and alkalis.

A color of even greater permanency is toluidine red from diazotized meta-nitro-paratoluidine and beta-napthol. The cost of the former intermediate makes its use not quite so common. An interesting incident grew out of the attempts of Mr. Anstead to improve upon the quality of the post-war toluidine reds. The laboratory results were fine and bright and so too were the results on the semi-commercial scale tests, but the first four or five large plant batches were miserable failures. Temperatures were checked, dilutions were checked, materials were checked, but to no avail. Finally the only difference that could be seen was that lead brine coils were being used to cool the diazo solution, whereas ice had been used in the laboratory and the semi-plant operation. In the next run ice was therefore used and the diazotization was carried on in such a vat free from lead. The results were all that could be desired.

Lithol Reds and Eosine Lakes

The next colors in importance to the toluidine reds are the lakes made from litholred, which is a combination of Tobias acid (2-napththylamine — 1 sulphonic acid) with betanapthol. The sodium salt is used alone or diluted with white to give a yellowish red; when the sodium salt is boiled with barium chloride a bluer shade results. Treatment with calcium chloride produces a very deep, bluish red. An interesting fact to be noted in connection with the litholcolors is that the calcium lake will stand baking, whereas the sodium and barium lakes will not. In purchasing the dye, care must be taken to see that it does not give lakes which "bleed" in oil. This bleeding is due to the presence of beta-napththylamine arising from the use of impure Tobias acid. Lithol reds now appearing on the market as a rule are free from this objectionable feature. This oil-bleeding is a serious defect in fine printing because the color will strike through the oil and can be seen to stain the reverse side of the paper.

Eosine lakes are used to a considerable extent in process work where a very pure red of bluish hue is desired. The lakes can be prepared from eosine by precipitation with lead nitrate or lead acetate, but it is more economical to prepare them from the bromo acids. Eosine is the sodium salt of tetrabromofluorescein, whereas the bromo acid is the acid of the same compound. If the acid is used it is first dissolved in alkali and then re-precipitated as the lead salt. Experience has shown that greater strength is to be had from the bromo acid than from the corresponding eosine. Bromo acids are to be had in two classes, the boiling bromos, which are precipitated and boiled, and the non-boiling bromos, which are struck at lower temperatures. The first class gives a bronze red while the second class gives a red of dark overtone and more transparency.

These are the main divisions of the reds, though many others might be named. In fact, a well-equipped printing-ink concern uses 20 to 25 different red pigments. Unfortunately it seems to be a rule with red pigments that the stronger and brighter the color the less permanent it is to light. For instance, the bright, clean eosine and rhodamine lakes are very fugitive with light, whereas the duller para reds and madder lakes are comparatively permanent.

Blue Pigments

The blue pigments used in the greatest quantity are the so-called iron blues. They vary in shade from a greenish blue to the blue of a reddish, almost purplish cast. Before 1914 nearly all the blues were made from potassium ferro-cyanide, either alone or in combination with sodium ferro-cyanide. The impression existed in pre-war days that good blues could not be made from prussiate of soda. However, that impression was speedily removed from necessity when the supply of potash was cut off and it was not long before the American dry-color maker learned that very good blues could be made from prussiate of soda. Even now when prussiate of potash is available, the soda blues have not lost their popularity.

Ultramarine blue, another pigment of great utility because of its cheapness and resistance to alkali, has reached a perfection in England and America never known before, even among the products of the best European makers.

The only blue lake used to any great extent is peacock blue, the barium lake of patent blue. This is used largely in process inks on account of its pure blue tone. The peacock blues of war times and post-war times were not very satisfactory.

The product was helped some by imported dyes, but now the American manufacturers are making very good patent blue.

Other Ink Pigments

The yellow pigments in greatest demand are the chrome yellows made from sodium bichromate and lead acetate. To a basic lead acetate solution is added a bichromate solution containing sulphuric acid. The lead chromate formed varies all the way from a light lemon yellow to an orange, depending on their reaction. The light yellows show an acid reaction, the medium yellows are practically neutral lead chromate, while the orange yellows are made by boiling the precipitated lead chromate with caustic soda or soda ash, thereby forming the basic lead chromate.

Yellow lakes from the barium precipitation of acid yellow dyes are used where a transparent yellow is desired in contrast to the opaque chrome yellows.

Most of the purples and violets are made from methyl violet which can be had in a great variety of shades from the very red (R) to the very blue (6B). Where brilliancy of color and no great amount of permanency are required, the usual method is to precipitate the methyl violet with tannic acid and tartar emetic. However, under patents now licensed by the Chemical Foundation, violet lakes may be produced from methyl violet by precipitation with sodium tungstate or with phosphotungstic acid. This increases the permanency of the violet lakes to a remarkable degree and raises them from the "fugitive" to the "semi-permanent" class. The peculiar thing about the lakes so produced is that when acted upon by light they turn darker. This increased permanency may be extended to some of the other basic dyes like fuchsine, malachite green, and Victoria blue, but the lakes of these dyes have not the variety of application that the purple lakes have.

Manufacturing Kinks

In the manufacture of pigments a good washing is necessary because the salts formed on drying down with the pigment not only reduce the strength but are likely to affect the ink, especially when intended for lithographic purposes where the action of the salts with the water may destroy the working qualities of the ink. Drying must be watched closely in pigment making.

Some colors are readily affected by heat and it is better in most cases to dry for a longer time at a low temperature than to heat too high in order to speed up drying. About 160 deg. F. is a very good temperature for the drying ovens. The general scheme is to draw air through coils heated by steam. This heated air then passes over the color, which is in thin cakes on drying racks. Exhaust steam from the boilers can be used to good advantage here.

When dried, the color is ground. The finer the color up to certain limits, the better it can be ground on the ink mill with varnish. About 60 to 80 mesh is the proper fineness. Finer than 80 mesh makes the color too fluffy and causes a great deal of dust and waste. In order t oget uniformity the color is ground into large mixers holding 200 pounds or more. It can then be strengthened if weak, or cut down if too strong. As a rule a composite of several batches of pigment are mixed at one time, as it is practically impossible to make every batch of pigment identical and this method strikes a good average. Standards for comparison purposes should be taken the same way. Too often the enthusiastic color man, on seeing a remarkably fine batch come though the factory, adopts it as the standard, sends out samples and then has tough sledding to duplicate it, whereas if he had taken an average of eight or ten factory batches he would be nearer the true standard. Another dangerous practice is to send out samples of laboratoy lots before they have been duplicated in the plant.

The improvement in the last two years in the quality of the dyes and pigments produced has been remarkable. Old standards adopted during the war look dull and muddy by contrast with colors produced with improved dyes and intermediates. Along with the improvement in colors has come an increased discrimination upon the part of the printer and color user.

Ink Manufacture

After the varnish and pigments have been prepared they are sent to the mixture room. Here they are weighed into mixing cans and the color is thoroughly wet with the varnish in a pony mixer. This is a machine so geared that the can turns in one direction while four prongs, dipping into the mixture, turn in the opposite direction. The ink is then sent to the mill room, where it is run over the ink mill. This mill is composed of three steel rollers with carefully ground surfaces, set in a frame. The rolls are usually 9 or 12 inches in diameter. Their highly polished surfaces roll in contact with each other. The ink is fed into the near roller, which rotates clockwise, and is ground between it and the middle roller, which moves in a counter-clockwise direction. The ink is taken from the front roller by means of the knife-edge of the apron which fits tightly against the roller. A great deal of heat is generated during grinding and the rollers are made hollow so that cooling water can be passed through them. Many colors change on grinding if the rolls are not so cooled. The light shade of paranitraniline red will develop quite a bluish shade on grinding or may even turn brown if too much heat is developed.

Proving and Testing

The number of runs through the mill which an ink requires is determined by the pigment. Some colors, like the chrome yellows, are ground in three runs, while the iron blues will often take five or six. The question of determining whether or not an ink is properly ground is largely a matter of experience. An experienced ink-maker can tell by rubbing the ink about under his fingers. Spreading the ink out under a spatula will often show particles of grit.

As the last run of the ink is coming out of the mill, a small sample is sent to the testing department, where it is drawn down on a sheet of paper against the standard to get the overtone, or mass-tone, and the undertone, or shade. A small portion is then carefully weighed out with an opaque white mixing ink in the proportion of 10 to 1 of color; the standard is treated in the same way. This test shows the tinctorial or coloring power of the ink and gives a very good way to determine any fine differences in the shade since slight variations are easily discernible in this "bleach test".

It has been found by experience that whenever possible it is best at this point to make a proof of the lot of ink and of the standard and allow them to stand over night to notice the effect of drying. Any change in shade will likewise be noticed. The body of the ink should be examined the following morning, as often an ink will appear to have the right body when warm from grinding, but on cooling over night may become too heavy or may "liver up." A case was recently called to Mr. Anstead's attention where a green made from an iron blue and a chrome yellow had changed to a decidedly yellow tone over night due to the action of the paper on the blue. The remedy was to make the pigment several shades bluer.

Printing Requirements

Printing ink is put to such a variety of uses that the ink-maker must use a great deal of discrimination in the choice of his pigments and varnishes, but most especially of the former. For instance, an ink may be wanted for a hand-press, for a flat-bed press, for a rotary press, for offset work, for a bread label, soap wrapper, butter wrapper, poster, bag, or bottle. Each use calls for a different body and drying quality of ink and in addition, the coloring matter must have certain properties. One color may be permanent enough for a circus poster but might bleed in hot paraffine and therefore be unsuitable for a bread label, or the color might make a beautiful ink for an art calendar or a book illustration but be utterly useless on a soap wrapper.

The question of fastness to light is of vital importance in many cases. It is a sad day for the bill-board advertiser if the ink maker has been careless in the choice of his pigments and after three or four days his advertisements have bleached out or changed color decidedly. Of course, the best test for permanency to weather conditions is to put the color on a billboard for a period of one month. Often quicker tests must be had and resort is made to artificial devices. One of the best of these consists of a constant-arc light surrounded by a metal cylinder containing openings and brackets on which the colors to be tested are exposed. One half of the sheet is kept covered and one half exposed. A pan of water acts as a humidor and with the aid of a fan, which draws a current of air through the apparatus, prevents baking. To simulate atmospheric conditions the proofs are wet every morning. Proofs are left under the light for a time depending upon the conditions which must be met. One hour under this light equals six hours of sunlight. Sometimes a qualitative test of colors to determine the dye used can be made by this exposure test. For instance, a malachite green lake can be distinguished from an acid green lake by the fact that lakes from the former dye turn darker under light, while lakes from the acid green fade out entirely.

Three Classes of Printing Inks

Printing-inks may be divided roughly into three classes: typography inks include all inks for labels, catalogue and book work and general job-printing. The inks of this class are much softer and thinner in body than the lithographic inks and in the peparation of them, pigments can be used which "bleed" in water.

Lithographic inks are heavy in body. They are used in the presence of water and therefore must be water resistant. Accordingly great care must be exercised in the selection of varnishes and pigments. Inks which absorb water and become short and greasy are worthless for lithographic work, as they tend to smear and do not give clear-cut impressions. An ink which when rubbed with water on the lithographer's stone becomes pasty or stringy is unfit for use as a lithographic ink

Intaglio Printing

Printing from depressed surfaces, more commonly known as the **roto-gravure process,** ten years ago was used by only a few of our largest Sunday news-papers while today there are few papers that do not have a gravure supplement. In this type of work the design is etched in copper cylinders. These cylinders dip down into the ink and are wiped off by a steel blade, leaving the ink in the depressed surfaces while the high lights have no ink on them. The paper is then passed over the cylinder, and after running about 25 feet, the reverse side is printed. Hence for this type of work ink must be a rapidly drying one.

The ink used in this process is of a cream-like body and dries quickly. In opposition to news ink which dries by absorption into the paper or lithographic inks which dry by oxidation of the linseed varnishes, intaglio inks dry by evaporation.

It is the aim of the manufacturer to incorporate as many shades as possible into one ink, in other words, a brown is a multi-colored ink, incorporating many shades of brown into the one ink. This is attained by a study of the various pigments which upon investigation are found to assume different positions in the etching or engraving so that the final printed subjects possess everything from a red shade to a very dark or almost black brown. In fact, our house has made a special series of colors which are used only in Gravure Inks. These pigments must be very soft and possess absolutely no abrasive qualities. Such pigments are then ground in a very quick drying varnish.

Most of this work at the present time is printed in brown although any color can be used, for example, the "Chicago Tribune" are now printing a supplement in four colors.

The best results are obtained by using a super-calendered stock, 40 or 50 lbs., Faint Cream Tint—Dead White makes the picture too harsh—and an ink possessing a velvety finish. When a paper is not properly calendered, the ink has a tendency to sink into the paper and the finished print lacks the required gradation of tone. It is possible for the ink manufacturer to partially eliminate this by using a hard or glossy finished ink but this trouble can be only partially eliminated at the very best.

Paper Troubles

Owing to the tendency of the ink to evaporate quickly, any delay on the press after the run is started due to either mechanical or paper troubles, seriously impairs the quality of the printing as the ink soon tends to lose life on standing. The principal paper troubles are caused by improperly wound paper, one side of the roll being tighter than the other—this first produces wrinkles on the printed sheet and finally breaks the web. All pasters in the roll of paper should be eliminated if possible, or carefully made of non-meltable paste as dextrine. Calender marks are the cause of considerable delay. The paper used in gravure printing is subjected to a harder pull on the press than is ordinarily encountered, and therefore should possess a higher tensile strength. Another difficulty which is not infrequently encountered is the presence of free acid due to the bleaching materials not being properly neutralized at the end of the bleaching process. In some cases it may be due to an excess of alkali which was added to neutralize the acids from the bleach; when this occasion arises, the copper cylinders after running a few hours possess a rough surface due to the interaction of the copper with the acid or the alkali. It then becomes impossible for the pressman to keep the margins clean as the ink lies in the roughened surface, produceing a tint on the margin of the printed sheet. The pressman usually tries to obviate this by putting in new doctor blades, and while this tends to cut off a part of the roughened surface of the copper, it also cuts off part of the etching or subject with the result that the copper cylinder is worn out in a very short time and the vast majority of sheets printed from it are far below standard.

Process Inks

The highest grade ink of all is the process ink. In this work, three, four and sometimes more colors are superposed upon one another. The colors used in four color work are yellow, red, blue and black, printed in the order named. Each color, except the yellow must be transparent or semi-transparent to get the effects of the colors beneath it. In this way, reproductions of paintings are made. A separate plate is made for each color by photographing the painting four times. Each time only the color value desired is photographed, the others being kept out by suitable light filters. Colors like green, orange, violet, etc., are formed by combinations of the four principal colors. For instance, blue over yellow gives a green, or a dark purple would be produced by blue over red intensified by black, and so on. The colors entering into these inks are of very pure tone and must be of fine grain, otherwise the cuts would be filled up and ragged outlines result. Only the very highest grade linseed-oil varnishes are used in process inks.

News Ink

This is more or less familiar to you all. It is made from mineral oil and carbon black specially selected, and dried and depends entirely upon absorption for rapidity of drying, which is absolutely essential and important for the paper maker to thoroughly understand. I am indebted to Mr. Harry Hughes, an Ault & Wiborg specialist on news-paper. printing for remarks under this heading.

Ink is always the line of least resistance and many times blamed for poor printing, where, if the facts were traced in the matter, it has absolutely nothing to do with the ink. For instance: printing on news print paper is purely an absorbent proposition, and some rolls will go through with a fairly good finish and adaptable to printing ink, and others will go through hard and with almost a glaze on the surface of the sheet, impossible for the ink to strike in and hold properly as it should. Then again, you get paper without any finish, and the ink will go into that like water into a sponge. As we all konw, groundwood pulp has an affinity for printing ink while sulphite will divorce it, and there is considerable sulphite in all news print paper.

Another trouble the ink man has is that paper will vary in thickness, running all the way from 28 lb. stock to 32 lb. stock. In some instances you will find this in the one roll, and you can readily see where, if a printing press has its impressions set for 32 lb. stock and it runs into some 28 lb. stock, the ink will only kiss on instead of being pounded in by impression, and will leave a smeary dirty sheet, blamed on the ink that is working all right on proper impressions.

Another trouble of the ink man is the plates. When the metal goes off, as it does in some instances, it gives you a soft plate and after a run of possibly 10,000 papers will become soft and the printing will look flat. This is one of the greatest troubles the ink man has, and is very hard to explain. The metal consists of tin, antimony and lead, a very large proportion of this metal being lead, the tin being used for brightening and antimony for hardening. When the antimony burns out, we then get soft plate. We start up on the run and everything looks all right, you run 10,000 and you get the facts, as before mentioned.

We are also blamed for other troubles of the paper maker, it being the ink man's experience of going to paper mills to see enormous amounts of grinding stone laying around, used for grinding up wood pulp. They tell you they get the sand out of the paper, but there has always been a question, as to how much is left in. It was the writer's experience about two years ago to meet somebody from the Canadian Pulp & Paper Companies, who was being sent around to co-operate with the pressrooms and find out what their troubles are and try to eliminate many of them. This is surely a step in the right direction and heartily endorsed by the ink man.

The universal ink is black. There are innumerable kinds of black inks. Blacks which dry by penetration may be made from cheap carbon blacks and mineral oil. Rotary blacks for process work, which dry by oxidation, are made from very good rosin-oil varnishes or linseed-oil varnishes.

It must be very plain to you all that every different kind of stock almost invariably requires a different kind of ink or a conditioning of the ink to meet the printing of the ink on to the various papers. Starting with your news-print paper which takes the cheapest form of black ink, I would say right here that there is too much concentration of the part of the newspaper publisher on the cheapness and price. To my mind the most important feature is the appearance of the printed sheet and this cannot be accomplished with a news ink containing an excess of oil, or a cheap brownish or dirty oil which will strike through and stain the reverse side, or by stinting the proportion of pure carbon black used (which is an expensive ingredient and constantly varying in price) or the substituting of lamp black or other cheap blacks which have not the tinctorial strength of carbon. The best carbon black is produced by the sooty deposit from natural gas and comes from the natural gas fields of Pennsylvania, Virginia and Louisiana. A news ink with the addition of a little blue toner will show greatly improved results but, of course, this immediately raises the cost, but from the advertiser's point of view should be worth it. I might say that it would be well worth the while of the paper and ink men to get together and endeavor to produce what might be termed a model newspaper as a demontration sheet to show what can be done in the way of improving the appearance by getting a higher quality of paper and ink, as there are, no doubt, many publishers who would be glad to get helpful advice of this nature.

Other Kinds of Printing

Poster Printing.—The colors almost universally used here are Red, Blue and Black, although Yellow and other shades are often employed. As this class of work is often printed and delivered practically the same day, as date sheets, the paper must be absorbent, since this is the quickest drying method. The paper must also be non-fading for the best results. Sometimes, however, machine finished and calendered papers are also used, in fact, almost invariably on lithographic posters, in which case driers of the oxidizing type are used in inks. In fact, the whole composition of the ink has got to be changed, and higher class varnishes and stronger pigments used as the harder finished paper takes a thinner film of the color.

Book Printing covers a wide range of papers and in every case the paper must be taken into account by the man who supplies the ink for the job, in order that he may balance his product to take care of the paper as well as the results desired by the printer as to quality, and shade and also method of application, i. e. type of press. We now have inks that will print half-tones on calendered paper which have such rapid setting power that the job may be printed on both sides, folded and delivered the same day. Not many years ago it was necessary to let the job lay over-night, at least if printed on a highly calendered stock, in order to get one side thoroughly dried before the other side could be printed cleanly. The ink above mentioned is not thoroughly hard dried in this short space of time but due to its perfect adaptability to this class of paper it sets so quickly that the job can be handled without dirtying the other side of the sheet, and by the time the job is ready to deliver it is hard dried without any hold up in the shop whatsoever waiting for it to dry

Half-tone Printing.—This is accomplished from copper screen cuts which run from sixty dots to the inch on newspaper and poster work to 175 used on the very finest catalogue work on coated paper. As soon as you get into one of these fine screen half-tones in letter-press printing, you have got to have a coated paper for the best results as the surface must be smooth. Such a fine screen cannot satisfactorily be used for the highest class of work on super-calendered papers as a rule, as you are very apt to have the little indentations in the paper break up the screen where certain shades in the half-tone inks strike it. Some coated papers will absorb the color to such an extent that they will have a tendency to kill the quality of the complete job, making the ink look sickly or weak. The chief difficulty the ink man has with coated papers however is that they pluck too easy, which means the body of the ink must be reduced and if this is carried too far, as is sometimes necessary, to prevent this plucking the ink squashes out on the half-tone and instead of printing cleanly and sharply from the top of the dot, it runs down into the cut and squashes the dot out. The paper should be sufficiently hard surfaced that fairly stiff bodied ink can be used without plucking for the best results.

Hard bond paper will stand very stiff bodied inks but due to their comparatively rough surfaces a hard impression is required in order to pound the ink into the stock. These inks, of course, require very much higher drying power by oxidation than inks for any other class of paper.

Cover Papers. This item covers a wide range of stock but some of these papers come in dark shades with rough surfaces and in this case colors of great capacity must be used and the pigments selected, such as Chrome Yellows, English Vermillion and Ultramarine Blues ground in heavier stiff varnishes.

New Developments

New developments in printing machinery must be met by the ink-maker. One of the latest improvements is a press doing what is called simultaneous color printing, that is, three colors are printed, one on top of the other, before the sheet leaves the press. The ink manufacturer is also called upon to meet new conditions arising from change of paper stock or method of working. The printer makes his changes to suit his customer or his purse and then tells the ink-maker to get busy and make an ink to fit his requirements.

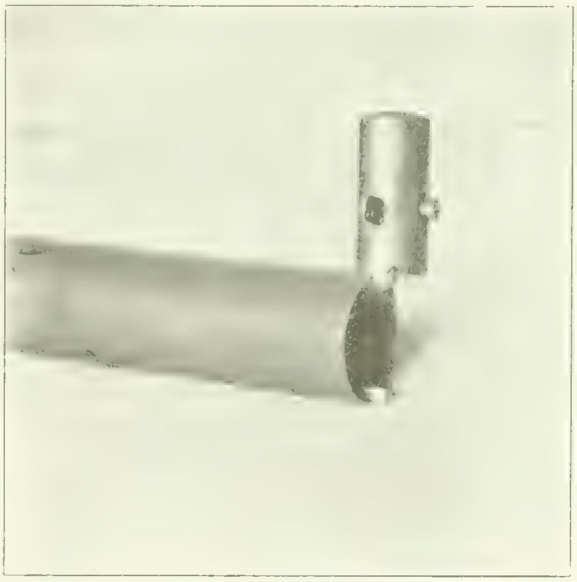
It may be seen from this rather cursory review of the materials and manufacture of printing-ink that physics plays as important a part as chemistry. The chemistry of ink making is comparatively simple even in pigment manufacture, whereas the physical side of the process presents infinite possibilities. Colloidal chemistry, however, is beginning to play an important part in ink-making and many of the ink-maker's difficulties will probably be overcome as our knowledge in this field increases.

Constant research supplemented by the accumulated experience of the ink maker is the price to be paid for this industry's success.

A STAMP FOR THIN TUBING

A somewhat novel stamping tool designed specially for the purpose of placing small identifying marks on the ends of thin tubing, is shown in the accompanying engraving. This is being used in connection with a material tracking system to facilitate the locating of any particular part. Four different marks can be made with this tool; but the special feature is the mannner in which it supports the work while stamping. Some kind of internal support is, of course, absolutely essential to avoid distortion; but the general practice of using a separate piece to insert in the tube leaves room for improvement on account of the length of time required, and the objection there always is to loose parts.

The dimensions of this tool depend upon the size of tubing it is intended to be used on. The reader will obtain an approximate idea of what these should be from a glance at the photo.



The support piece is made from round stock—machine steel will do nicely—bent in the form of a square as shown, to fit snugly the bore of the tubes. The stamp itself is also made of round stock—cast steel—drilled down the center to slide on the straight portion of the supporting piece and filed with crossed Vee slots on the bottom to separate distinctly the four stamping marks that are afterwards cut in. Two through holes drilled at right angles in the center of the stamp clear the screw in head, which is inserted in a tapped hole in the support piece. These holes must be bigger than the head of screw so that the latter, while acting as a locating point for the four stamps by passing it through the different holes and thus forming a simple means for keeping both parts together is yet loose enough to allow the stamp to move up and down slightly. Tubes stamped on the ends by this tool show no distortion whatever.

Reports of Committees

REPORT OF EDUCATION COMMITTEE

Your Committee in the year under review has kept in touch with developments in several lines of educational endeavor. These include existing educational provision in mill towns, work at Universities calculated to attract science men into the Industry, continued co-operation with the Joint Committee on textbooks and the activities of the Institute of Industrial and Domestic Arts, the name of the organizaton formed to carry on the work of correspondence instruction in the Manufacture of Pulp and Paper, as authorized by the Canadian Pulp and Paper Association.

Important educational work bearing on industry is being carried on by local agencies such as Mills, Advisory Industrial Committees, Y. M. C. A., Trade Councils and others. We would draw the attention of technical men in the Industry in Ontario to a provision of the Ontario department of Technical Education, whereby instructors may be engaged by local school authorities, for special work such as draughting, chemistry, engineering, etc. These instructors are preferably drawn from local industries and are paid from $3.00 to $7.00 per night. This work provides a chance for technical men to add from $6.00 to $15.00 a week to their incomes during the Winter. Some communities have no organized work of this kind as yet and so present an opportunity for development. The local authorities have the power to issue temporary certificates of qualification.

The work done in the Universities is bearing good fruit. Lectures have been delivered in the past two or three years at McGill, Toronto and Queens Universities by members of this Committee and students have been employed in mills during vacations. One of the results is that university men may be found in many jobs in the mills from broker hustler up, and continuation of this method will introduce to industry a number of young men of the most ambitious type, prepared to serve in the lower paid jobs for the experience to be gained thereby. This movement to industry, of the University man willing to submit to a thorough practical training, will have an important bearing on the development of higher technical efficiency.

A useful body known as the Workers' Educational Association has been formed and is carrying on work in the larger centers, but can be organized in any community. Its object is not vocational education, but the preparation of its members for better citizenship, by giving instruction in economics, literature, history and art. It is supported by nominal membership fees and by contributions from labor unions, locals and trade councils, school boards, clubs, etc. The chairman of this committee will be glad to give further information about this important work, on request.

Members of this committee representing it on the Joint Committee on textbooks have kept in touch with Editor Stephenson, Secretary Kellogg, and the other members representing the T. A. P. P. I.

The first three volumes have met with a satisfactory reception from the industry generally. Very gratifying reviews have appeared in technical and scientific periodicals not only on this Continent but in Europe, Volume III. being accepted as the best work on pulp yet published, and Volumes I. and III. have had to be reprinted to meet the demand.

The Status of Volume IV. in January 1923 was:

Section 1.—"Preparation of Rag and Other Fibres."	At printer's.
Section 2.—"Treatment of Waste Papers."	At printer's.
Section 3.—"Beating and Mixing."	Nearly revised, a little work more to prepare for printer, two more drawings needed.
Section 4.—"Engine Sizing and Loading."	At printer's.
Section 5.—"Coloring."	Ready, minus one table
Section 6.—"Paper Making Machines."	Ready for author's revision.

For Volume V.—Manuscript largely in hand; much editorial work will be required and all men in the industry who are able to do so, must co-operate in giving information if certain sections are to be satisfactory:

Section 1.—"Tubsizing and Finishing."	M.S. in hand, shipping is yet to be described.
Section 2.—"Hand Made Papers."	M.S. in hand.
Section 3.—"Special Papers, etc.	To be done.
Section 4.—"Paper Testing."	To be rewritten.
Section 5.—"Laboratory Practice."	In hand.
Section 6.—"Definitions of Papers."	In preparation.
Section 7.—"Water."	On hand.
Section 8.—"Steam Power and Electrical Equipment."	To be done.
Section 9.—"Instruments and Accessories."	To be done.
Section 19.—"Transmission of Power and Transportation of Material."	To be done.

At the last annual meeting of the Technical Section a proposition was placed before the Section by the Industrial and Educational Publishing Company to inaugurate and carry on a system of correspondence instruction based on the textbooks prepared by the industry. It was decided, following the report of a special committee on the question, to recommend that the Pulp and Paper Association approve the proposal and appoint a special committee of executives to supervise the work for the Association. This recommendation was adopted and such a committee appointed, consisting of Messrs. George Carruthers, F. J. Campbell and O. F. Bryant.

An organization known as the Institute of Industrial and Domestic Arts was formed to carry on this work, with Mr. J. J. Harpell as President and Mr. J. N. Stephenson as Secretary. A Syllabus of Courses was prepared, copies of which in both French and English, are here for the use of interested members.

The Department of Pulp and Paper Making of this Institute has a faculty comprising many of the best known men in all branches of the Industry in Canada and the United States, who have concented to act as instructors and referees in their special lines. Mr. J. N. Stephenson is Principal, and Mr. J. J. Clark, formerly Dean of the International Correspondence Schools, is Vice Principal. Mr. T. L. Crossley is Director of Extension Service and Supervisor of Education in English. Mr. P. E. Piché, B.A., is Supervisor of Education in French and Translator, putting Volumes I. and II. of the Text Books into French. Volume I. has already been translated and the first study papers are in the hands of the students.

The first students were enrolled in June, thus inaugurating the first correspondence school of Pulp and Paper Making. Active campaigning for students, by personal visits to the mills was commenced early in September in the Niagara Peninsula and St. Maurice Valley and has been continued since, by Messrs. Harpell, Piché and Crossley. A very gratifying reception has been met with in most of the mills visited and up to the present 150 students have been enrolled, most of these being entered for the complete Pulp and Paper Course. Over 10% of the students enrolled are University graduates.

A large part of the industry remains to be visited. We wish to point out that interest on the part of the men and success in obtaining students, has been in direct ratio to the attitude of co-operation met with at the plants.

We also point out that the Industry as a whole is benefitted and better equipped for future developments by the carrying on of this work, and we therefore urge a cordial and active co-operation, not only when your several mills are visited, but at all times, by keeping the matter constantly before your men and by appropriate recognition of those who enroll and perservere in these Courses. We especially urge the executives of the smaller mills to such line of action, because employees who are studying their work become more useful. Two or three ambitious, hard working men studying the industry might make the difference between success or failure in the operation of some mills and this fact should be well recognized.

The practical man of long experience, but of limited education, may become one of the most useful foremen or superintendents with the aid of a little knowledge of mathematics and physics, and the practice of putting his ideas in writing, as obtained in a correspondence course.

This work is only at its inception now. It is the second stage of a monumental work of enormous possible benefit to employer and employee, both directly and indirectly.

For these reasons we cannot too strongly emphasize the need for co-operation with the personnel of the Institute of Industrial and Domestic Arts, and for encouragement and help to the men who show their bona fides by putting hard earned money and time into the endeavor to widen their range of usefulness.

Indifference is the heart disease of industry and indifference is in very large measure due to ignorance.

By the co-operation of the various agencies now reported upon, there is no man in the Pulp and Paper industry, however illiterate, provided he can merely read and write, who need be without a good education in the principles upon which his daily work is based, and while we emphasize the advantage of this state of things to the industry we can also point out that such knowledge removes to a great extent the curse of drudgery, and brings appreciably nearer the day when men throughout our industry can say, with Henry Van Dyke,

> "This is my work, my blessing, not my doom,
> "Of all who live, I am the one by whom,
> "This work can best be done in the right way.

Respectfully submitted,
George Carruthers
A. P. Costigane,
C. Nelson Gain,
J. N. Stephenson,
T. L. Crossley (Chairman).

REPORT OF COMMITTEE ON CHEMICAL AND PHYSICAL STANDARDS

Summary of Activities

The work of the Committee has been entirely devoted to the development of a standard method of Testing Pulp for Strength. A tentative outline of the points necessary to investigate in a complete study of this problem was drawn up and adopted by the Committee as the basis of their working plans.

The work was divided into two sub-divisions namely, (1) Literature Study and (2) Experimental.

(1) Literature Study.—It was the feeling of the Committee that a complete literature study of the subject would be most useful and would well repay the members for the work necessary for its compilation. An endeavour has been made therefore to carry this project through and the compilation will appear, in its first form, at the January meeting.

(2) Experimental.—The experimental work has been devoted to the determination of the variables affecting the strength of the test sheet after its formation and in particular that of pressing. The fundamental curves for strength in relation to: — pressure applied, ream weight, moisture content at time of pressing and duration of load have been established for unbeaten Sulphite pulp. A thorough study of the methods used in carrying out these tests has been made and will be put before the members of the section for criticisms and suggestions.

A similar study of Kraft: Groundwood and Soda Pulps will be undertaken and the necessary duplication of the work for beaten pulps during the coming year.

Respectfully Submitted,
E. P. CAMERON,
Chairman.

REPORT OF THE COMMITTEE ON ABSTRACTS AND PUBLICATIONS.

During the past year your committee provided for 140 pages of abstracts of current articles which were published in the Pulp and Paper Magazine and paid for by that journal. These pages have been reprinted as a bulletin of the Technical Section and distributed to members through the secretary's office. An index of the abstracts is in preparation.

It has been suggested that instead of reprinting the abstracts in full shortly after publication in the magazine, it might be better in the end to hold merely the first three or four lines indicating the title of the article and the place where it appeared, then to collect these at long intervals, according to subject, once or twice a year, and reprint what would be an index of the year in this form. The opinion of the Section is awaited by your committee as to what should be done in this respect.

At the beginning of the New Year, the chairmanship of the Abstract Committee of the Technical Association of the Pulp and Paper Industry, was taken over by Mr. Charles J. West, leaving Mr. Ross Campbell with more time to devote to his work as chairman of the Dyestuff Committee. We wish to express at this time our deep appreciation of the cordial co-operation and ready assistance of Mr. Campbell during the several years of his chairmanship. The handling of the abstracts will continue to be carried on co-operatively as has been done in the past.

The chairman had the pleasure of meeting Mr. Arthur Baker of Greenhithe, England, the first chairman of the British Technical Section, and as a result of conferences it seems probable that the British Technical Section will join with the Technical Association and our own Section in the matter of abstracts.

The abstract program of the T. A. P. P. I. will be curtailed slightly by the restriction of articles dealing with engineering matters and with the forestry. Your committee however, feeling the great importance of forestry matters to the Technical Section and to the Woodlands Section, have decided to continue this service and have arranged with the Pulp and Paper Magazine to publish abstracts of articles dealing with forestry under the department entitled "With the Woodsmen."

Bound copies of the abstracts for 1922 can be had from the Pulp and Paper Mazagine at $2.50 per volume.

There are now ready for distribution copies of the **Transaction and Proceedings of the Technical Section for 1922.** This volume contains papers, reports, and discussions presented at the annual meeting last January and a brief account of the summer meeting of the Technical Section at the Abitibi Power & Paper Company, Ont. It includes also the by-laws and a biographical list of members of the Section. This list of members is not up to the minute but will be kept revised from now on as the committee has under consideration the preparation of a semi-annual volume.

Respectfully submitted,

J. N. STEPHENSON,

Chairman.

PAMPHLET ON POWER PLANT LOSSES

The Uehling Instrument Company, Paterson, N. J. has just issued a 12 page folder which explains concisely the two biggest losses in the steam plant, namely (1) the loss in steam turbine economy due to air leakage into the condensing system and (2) the sensible heat in the flue gases lost up the chimney.

A table gives data on steam turbine economy as related to the absolute back pressure. The Uehling Combined Barometer and Vacuum Recorder, as illustrated in the folder, is in effect an automatic log of condenser performance because it records the existing vacuum as well as the absolute back pressure for every second of the day. The chart is legible to less than 1-20 inch of mercury between the range of 0 to 6 pounds back pressure thus detecting air showing whether or not the condenser is large enough to handle the load under any given conditions.

Data on combustion are given in another table, such as the variation of the chimney loss with the percentage of CO_2 and its relation to flame temperature and ratio of air to fuel supply.

The Uehling CO Recorder and Indicator are illustrated and twelve different kinds of important information which these instruments furnish are cited.

A list of prominent users of Uehling equipment and a list of Uehling bulletins are also appended in the folder.

ALUMINA PRODUCTS USED BY PAPERMAKERS

Alum. Papermakers' alum is sulphate of alumina, $Al_2(SO_4)_3 18H_2O$. Other alums are double salts, such as sodium alum, $Al_2(SO_4)_3Na_2SO_4 24H_2O$. Used as a mordant for dyes and to set size on to fibres.

Alum Cake. A commercial form of aluminium sulphate.

Alumina. The oxide of aluminium prepared by strongly igniting aluminium (or aluminium) hydrate in a crucible. A white amorphous powder.

Crude Alumina is the second largest chemical constituents of English china clay, the chemical composition of the purest grades being: Silica 46.3, Alumina 39.8; water13.9

Aluminate of Soda. Prepared by dissolving freshly precipitated hydrate of alumina in caustic soda. Can be used in the process of rosin sizing.

Alumine. A trade name for a filler, consisting chiefly of calcium sulphate with a small proportion of aluminium sulphate. Said to be well retained by paper.

Aluminium Hydrate. A bulky gelatinous precipitate produced when ammonia is added to a soluble aluminium salt. If ammonia is added to the solution obtained by extracting paper with hot water, the formation of a gelatinous precipitate indicates the presence of alum salts.

Aluminium Resinate. A compound held by some authorities to be formed when rosin soap is treated with alum in sizing paper. Evidence of its formation is not conclusive.

Aluminium Sulphate. Used in the sizing of paper. Added to animal size it acts as a preservative. Added to rosin size it precipitates the rosin upon the fibres in the beating engine. An important mordant for fixing colors.—China Clay Trade Review.

INSECTS EATING FORESTS

During 1921 the forests of the southern half of Saghallen (Japan) have suffered severely from an insect known as matsukemushi (lasiccampidae). According to information obtained from the company owning the greater portion of the forests by Vice Consul Broomall, Yokohama, 85,750 acres of timber were destroyed by this insect during last year, or about 300,000,000 cubic feet of standing timber. It is reported that some of the timber can still be used if cut within a year.

Thank God every morning when you get up that you have something to do which must be done, whether you like it or not. Being forced to work, and forced to do your best, will broaden your temperance, self-control, diligence, strength of will, content, and a hundred virtues which the idle will never know.

—Kingsley.

Association Reports

THE TECHNICAL SECTION

Mr. President and Gentlemen:

Through the efforts of its officers and members The Technical Section has enjoyed a very successful year. Committees have been active, much good work has been accomplished and plans have been drawn up and action inaugurated which will prove of great benefit to our industry.

Meetings

Two meetings of the Section have been held during the year. The Annual Meeting took place in Montreal, January 25th and 26th and the summer meeting was held at Iroquois Falls, Ontario, June 19-22

At the Annual Meeting a very interesting and instructive program was offered. The papers were well received and much interesting discussion took place. The Papers presented at the meeting were as follows:

"Money from Steam; Helping the Sales Department", by R. L. Weldon, Mechanical Engineer, Three Rivers Pulp & Paper Company Ltd.

"Burning Pulverized Coal Under Power Plant Boilers", by Mr. Henry Kreisinger, Combustion Engineering Corporation, in collaboration with Mr. John Blizard of the United States Bureau of Mines.

"Safety Devices in Paper Mill Engine Rooms", by Mr Elmer B. Tolsted, Supervising Engineer, Independence Bureau, Philadelphia.

"The Manufacture of Felts", by Mr. E. S. Bates of E. S. Bates & Company, Montreal. Illustrated by photographic reproductions by C. R. Hazen.

"Getting the Most out of Machine Clothing", open discussion.

"The Utilization of Jack Pine in the Manufacture of Newsprint", by Maurice Neilson of the Belgian Industrial Company, Limited.

"The Use of Clean Water as a Preservative for Stored Mechanical Pulp", by Messrs. R. J. Blair, Pathologist and Clarke Cameron, Associate Chemist, Forest Products Laboratories, McGill University, Montreal.

The following Committees reported satisfactory progress: Educational Committee, Committee on Testing Moisture in Pulp, Abstracts and Publications Committee, Committee on Chemical and Physical Standards, and the Joint Committee on Text Books.

The Technical Section held its Summer Meeting at Iroquois Falls, as the guest of the Abitibi Power and Paper Company, Ltd. The eastern members left Montreal by special car on the evening of June 19th, picking up the members from Toronto and west, at North Bay, the next morning. They arrived at Iroquois Falls at 6:45 P. M. and were met at the station by the reception Committee. From the moment of their arrival the Abitibi Power and Paper Company did everything possible to make their visit both profitable and pleasant. That they succeeded may be inferred from fact that the meeting was voted as the best summer meeting that the Technical Section had held. The members left Iroquois Falls after lunch, June 22nd, and arrived in Montreal on the morning of June 23rd.

Standing Committees

All committees of the Section have made considerable progress during the year, but those deserving special mention are, The Committee on Education, the Committee on Research and the Committee on Physical and Chemical Standards.

The Committee on Education has kept in touch with several lines of educational activity. These activities include provisions for education in mill towns, co-operation with The Joint Committee on Text Books, lectures given by members of The Committee at various universities, and co-operation with The Institute of Industrial and Domestic Arts, the organization which has been formed to give correspondence instruction in the Manufacture of Pulp and Paper.

The Committee on Research has been extremely busy on a plan for co-operative research in the industry. The plan is now fully developed and awaits action by The Canadian Pulp and Paper Association. The committee has also been called upon by McGill University to advise the authorities in what way the University could best serve the pulp and paper industry. Too much credit cannot be given Col. C. H. L. Jones, Chairman for the excellent work which the Committee has done this year.

The Committee on Physical and Chemical Standards has continued its work on standardizing methods of testing pulp. The work is being carried out at the Forest Products Laboratories of Canada, and very valuable results are being obtained.

Textbooks

Satisfactory progress has been made on the Textbooks. As you are aware, Volume three made its appearance soon after the last Annual Meeting and was given a very enthusiastic reception by the Industry. There is no doubt but that this volume is the standard on the manufacture of wood pulp Volume four, which deals with the manufacture of paper, goes to the printer in its final revised form the latter part of January, and will be available to the Industry in a short time.

The manuscript for Volume five is well in hand but requires a great deal of editing before it will be in shape for the printer. It is impossible at present to say when this volume will be ready for distribution.

Every credit is due to the Joint Committee on Textbooks for the excellent work they are doing in connection with preparation and publication of The Textbooks. The amount of work connected with the preparation of a set of textbooks of this nature, is almost unbelievable, and this, coupled with the difficulty that has sometimes been experienced in getting the manuscripts from a number of the authors, has made it impossible to have the books ready for distribution as soon as the Committee would have liked.

Research

For several years there has been a recognized need for co-operative research in the Industry. Some years ago a committee on Research was appointed to devise some method whereby the research activities might be coordinated and to report its recommendations to the Canadian Pulp and Paper Association.

This Committee made every effort to come to a satisfactory working agreement with the Dominion Government whereby the Forest Products Laboratories of Canada should serve as a medium for co-operative endeavor, but no satisfactory arrangement could be made. Then for some time it seemed that a Bureau of industrial Research would be established by the Dominion Government, and that the Research needs of the Industry would be cared for by this organization. However, the bill to provide this bureau failed to pass the Senate and there seems to be very little likelihood of any help from this quarter in the near future.

In view of these facts the Committee have decided that the industry must act independently and have proposed a plan whereby the research needs of the industry may be cared for with a minimum of expense and a maximum of results.

The details of this plan have been in the hands of the members for same time. Briefly it consists in the appointment of a Research Director, at an adequate salary, whose duties shall be to co-ordinate the work of the research departments in the various mills with a view to eliminating needless duplication of work and concentrating efforts on problems of vital importance.

Education

At the last Annual Meeting the Industrial and Educational Publishing Company, Ltd., were authorized by the Canadian Pulp and Paper Association to carry on a correspondence course in the Manufacture of Pulp and Paper using the Textbooks of the Association as a basis for the course. A committee was appointed to look after the interests of the Association. The Industrial and Educational Publishing Company, Ltd. have organized the Institute of Industrial and Domestic Arts to carry on the correspondence course and the efforts of the Institute are meeting with marked success. On December 20th, 1922 about 150 students had been enrolled and there was still a large part of the industry which had not been solicited. This is truly a remarkable showing, and it would appear that the association has made no mistake in authorizing the Industrial and Educational Publishing Company, Ltd. to carry on this work.

Summer Students

The Section is continuing the plan of inducing students to enter the field of pulp and paper making upon completion of their university training, by trying to provide work for them in the Industry during their summer vacations. Last summer nine mills gave employment to university students. The number of students employed was 35. Reports received from the mills have shown that, in every case, the student made a satisfactory record, and in some cases the record was even better than satisfactory.

This year the Technical Section made no provision for a prize essay competition among the students, but a number of inquiries have been received from students who were employed during the summer, asking whether they might submit essays to the section. They have been informed that all essays submitted will receive careful consideration and if any are found worthy they will undoubtly be given recognition by the section and published in The Pulp and Paper Magazine.

It is interesting to note that a Paper Club has been formed by the students at McGill University who expect to associate themselves with the industry at some future time. The Club has a membership of from 30 to 40 members. It holds regular meetings, discusses topics of interest to the pulp and paper industry, and takes trips to some of the pulp and paper plants.

Membership

The membership is practically the same as last year, as is shown in the following table which does not include some 30 students in the correspondence course who have recently qualified, but who have not been voted on

	Jan. - 1922	Jan. - 1923
Full members	119	116
Associate members	15	14
Junior members	35	39
Student members	16	15
TOTAL	185	184

During the year we have taken in 25 new members and the apparent lack of growth is due to the weeding out of members who have been carried for some years without payment of dues, and in many cases without knowing their addresses. Fifteen members have been dropped for these reasons, two have died, and nine have resigned.

At a recent meeting of the Technical Section Council, it was decided that men in the industry who have enrolled for the course in papermaking given by the Institute of Industrial and Domestic Arts, may, upon application, become student members of the Technical Section after a certain probationary period. We have on file, awaiting action, applications from 79 correspondence course students.

All of which is respecfully submitted.

O. F. BRYANT, Chairman.

NEWSPRINT SECTION

Mr. President and Gentlemen,

The last annual report of the Newsprint Section recorded an unusually difficult year for members of this section, with a big decline in values as well as in production and a considerable falling off in our exports of newsprint paper. It is pleasing to be able to state that the year 1922 witnessed a welcome revival in this branch of the industry and new high records for production and shipments were established, although prices did not resume their former levels.

There has been throughout the year a gradual improvement in business generally and the improvement has been reflected in a greater demand for the product of our mills. The return to more normal conditions has gone further in the United States than in Canada and as that country consumes over 80 per cent. of our production of newsprint paper, our mills have benefitted accordingly. Although newspaper advertising during the year was below the volume of 1920, various other causes contributed to a record consumption of newsprint in the United States and resulted in an increase of nearly 15 per cent. over the consumption for that year.

While we still had competition from European countries, that competition was not so great or so keen as in the previous years. The rising exchanges together with an increased demand for newsprnit from other countries resulted in smaller quantities of European paper coming into our market and the increased demand for Canadian paper has enabled our mills to run very nearly to capacity throughout the year. Our production this year will be close to 1,100,000 tons or nearly 25 per cent. above the production in 1920, the previous record year.

Production and shipments of the Canadian mills during 1922 were as follows:

	Production Tons	Shipments Tons
January	81,418	83,555
February	78,294	80,476
March	85,973	87,572
April	83,731	82,924
May	94,502	94,812
June	92,588	93,901
July	90,282	85,447
August	98,141	97,764
September	94,444	92,210
October	97,467	97,362
November	97,148	96,232
December	92,563	99,902
Total	1,086,551	1,092,157

A comparison with the statistics of production for previous years will show the large increase in 1922.

Year	Tons
1917	689,847
1918	734,783
1919	794,567
1920	875,696
1921	812,727

Our exports of newsprint were, naturally, in line with our production and the monthly totals showed new high figures. The United States absorbed by far the largest share of these exports, accounting for over 90 per cent., of the total. So far as Australia is concerned we are still at a serious disadvantage compared with exporters from the United Kingdom on account of the preference tariff. The Canadian Government, largely at our instance, sent the Hon. Jas. A. Robb, Minister of Trade and Commerce to Australia a few months ago to endeavor to arrange a new trade agreement with that country. The result of this vist is yet to be disclosed but it is practically certain that unless the discrimination against Canadian paper by Australia is removed or modified to an appreciable extent, our shipments to that country must inevitably diminish. In New Zealand and South Africa, which, do not discriminate against Canada, our trade is more satisfactory.

The monthly record of exports was as follows:

Month	Tons	Value
January	67,701	$4,966,352
February	70,729	5,040,244
March	95,196	6,793,128
April	61,452	4,371,961
May	75,783	5,361,102
June	86,479	6,136,649
July	77,004	5,453,845
August	84,023	5,933,825
September	79,557	5,632,755
October	81,552	5,811,954
November	94,532	6,733,078
December	85,506	6,127,921
	959,514	68,362,817
Total 1921	709,238	$69,750,317

Of our total exports in 1922, 887,835 tons went to the United States, 33,693 tons to Australia, 12,029 tons to New Zealand and the remainder was divided mainly between Great Britain and South America.

The productive capacity of the Canadian newsprint mills was increased during the year by the addition of four new machines bringing the total daily capacity up to 3,825 tons. For the coming year there are new machines under construction which will increase this capacity by 490 tons, giving a total daily capacity for 1923 of 4,315 tons or about 1,294,500 tons annually. In addition to this increase to the present capacity of the newsprint mills there are other extensions planned which will probably not come into operation in the near future, but which will ultimately have to be reckoned with in estimating the future of the industry. The manufacture of newsprint in Canada has grown very rapidly, our production has more than trebled in the last ten years, and it is incumbent on all concerned to be certain that the growth shall be sound and shall be built upon a solid foundation.

The Section has held a number of meetings during the year and has dealt with various important questions arising from time to time, such as the Australian tariff situation, the temporary shortage of freight cars and the readjustment of freight rates, the desirability of uniformity in the trade practice of dealing with cores, the finding of a satisfactory standard for establishing the capacity of paper machines for comparative purposes, and other matters of trade interest.

The Section sustained the loss of a valued member in the death of Mr. Alex. MacLaurin of the St. Maurice Paper Co., Limited.

All of which is respectfully submitted.

GEORGE CHAHOON, Jr., Chairman.

BOOK AND WRITING SECTION

Mr. President and Gentlemen,

As members of the Book and Writing Section we can look back over the past year with considerable satisfaction. Because we have seen during that time a return from the unsatisfactory conditions prevailing during 1921 to conditions that in many ways have been almost normal. Publishers have, to some extent, given up the use of half tone news and are again using book papers. The demand for writing paper has been better, partly due to the fact that the stocks of jobbers instead of being very large have been probably less than normal, and also due to the fact that the consumption has increased as a result of generally improved business conditions.

Production for the year compares with 1921 as follows

	1921 Tons	1922 Tons
Book	24,731	30,729
Writing	13,534	18,326
	38,265	49,055

It is also gratifying to notice that our members have succeeded in developing an export trade which shows promise of a still greater development in the near future. This is, of course, of great importance not only for itself but for its effect in stabilizing the home market.

This section is to be congratulated upon the interest taken in its activities by every member. Nine meetings have been held during the year and the representation of the mills has been 100 per cent. at every meeting. It is such co-operation as this that gets results, and it is to be hoped that this splendid record is maintained throughout 1923.

One of the outstanding features of the year has been the promotion of amicable relations with the Canadian Paper Trade Association. The spirit of co-operation which has existed between the two associations has been of great mutual advantage. This spirit has been a great help in aiding the distribution of Canadian Papers and enabling them to keep their pre-eminence in the Canadian market in face of more determined efforts to sell foreign papers.

JEAN ROLLAND, Chairman

FELT SECTION

Mr. President and Gentlemen,

During the first four months of 1922, the demand for Felt Paper was light. Business, however, opened fairly well in the spring, and gradually increased until November. From November 15th., until the end of the year, there were practically no sales, due to the fact that most of the Roofing Manufacturers do not wish to carry an inventory of dry felt over the end of the year.

Most of the mills during this slack period do their repairs in preparation for next year's business.

As regards comparative tonnage made, the total output of all mills during 1922 was 13,094 tons as against 9,767 in 1921, showing an increase of 3,327 tons.

There was very little fluctuation in price during the year, the tendency being slightly downward which had had the effect of placing the industry on a more solid basis, in fact so much so, that during part of August and September, prices advanced to such an extent in the United States that quite a quantity was exported. This business was stopped when the new U. S. Tariff came into effect.

The outlook for the present year is that business will not be active until March or April, but will then open up with a very good demand and at higher prices, due to the fact that building operations became very active last Season, and were to a great extent stopped by the Winter. These, I think will be resumed after winter is over.

The prices of raw materials used, such as rags, waste paper etc., have already advanced this year in Europe, United States and Canada, and for this reason the price of felt will have to advance.

W. E. WALKER, Chairman.

COATED PAPER SECTION

Mr. President and Gentlemen.

The Coated Paper Industry, like many others, has passed through a year of uncertain, and unstable conditions, but on the whole it has come through more or less successfully.

Competition was exceptionally keen, and resulted in some cases in low prices that were entirely unwarranted by the cost of raw materials.

The price of Paper stock is still high and in view of Foreign offerings both in Coated Paper and unfinished paper for coating, the Paper Manufacturers would be well advised to give this question their serious consideration.

There is a an apparent shortage of Casein, which condition has increased the price 100 per cent during the last two months. As this is one of the principal ingredients used, in the manufacture of Coated Paper it is difficult to see how an advance in prices can be avoided.

Prospects for a return to normal business conditions during the current year, are good, and if the various mills adopt a policy of sound common sense in marketing their output, a year of prosperity is looked for.

GEORGE W. PAULINE, Chairman

BOARD SECTION

Mr. President and Gentlemen,

The last report of this section for the year 1921 showed that the Board Mills during that year, in common with other branches of the industry, had passed through a trying pericd.

We are pleased to report that the year 1922 showed a marked increase in our activities as indicated by increased production.

The year 1920 was considered by many as a banner year. It is, therefore, interesting to draw attention to the figures given below which show that the tonnage of Canadian Board shipped by Canadian Mills to Canadian Consumers in the past year exceeded the figures for 1920 by over 10 per cent. This indicates a substantial increase in the Canadian consumption of Domestic Board.

While this is true the figures will also show that the exports of Canadian Board were considerably less in 1922 than in 1920, although greater than those in 1921.

	Total Production Ton	Domestic Shipments Tons	Export Shipments Tons
1922	90,889	78,203	12,514
1920 . . .	97,710	69,994	27,813
1921	63,407	[illegible]	475

The export market has recently shown signs of improvement and it is to be hoped that this improvement is maintained and increased as the Canadian market appears to be unable to absorb the entire Canadian product at the present time.

The "Marking Act" has had a beneficial effect upon the Box Making Industry in that it tends to reduce the importation of paper boxes made outside Canada and to turn this business to Canadian Box Factories. This results in a direct benefit to the Canadian Board Mills.

Our section has held its meetings regularly throughout the year and the various members co-operated very well considering the unusual conditions obtaining.

Through the efforts of Mr. Cadman we have secured the promise of the Department of Customs at Ottawa to classify all importations of boxboard and allied materials under an increased number of headings, which will result in the figures published by the Department being much more useful than they are at present. The former classifications were so few [illegible] such a wide variety of material, that the amount of importations shown did not indicate exactly the class of goods being imported. It is to be hoped that the kind co-operation of the Department in this matter will be of increased benefit to this section.

The Box Manufacturers Association requested us to change our standard sheet to 25 x 40 and also to sell our product by number of sheets instead of by weight. It was felt that as there is a discussion being carried on at present to adopt 25 x 40 as the standard size for all classes of paper, it would be unwise for the board section to change their standard until such time as it appeared that the change was to become more or less general in the Paper Trade. It was also felt to be impossible to change from the present method of selling our product by weight.

All of which is respectfully submitted.

DAVID F. ROBERTSON, Chairman.

WRAPPING PAPER SECTION

Mr. President and Gentlemen.

The year 1922, so far as wrapping paper is concerned, was remarkably uneventful.

The manufacturers of wrapping papers held frequent meetings and operated throughout the year with restraint and good judgement. Prices showed but little fluctuation, dropping slightly during the Summer, and hardening again in the Autumn. At the end of the year, they were, if anything, a little higher than at the beginning.

A steady demand has accompanied steady prices and the year's business has been more satisfactory than seemed probable twelve months ago. It would appear that with the same good judgement, the coming year can also be made prosperous.

The mills reporting to the Association produced during the year 19,207 tons of wrappings, made up as follows: Kraft 5,965 tons; Mill Wrappers 5,769 tons and Various Grades 7,473 tons. In 1921 the same group of mills produced 16,172 tons of wrappings of which 4,103 tons were Kraft; 5,027 tons Mill Wrappers and 7,042 tons Various Grades.

Shipments reported during the year amounted to 19,115 tons, all of which, except 123 tons, was shipped to Canada. In 1921 the total shipments amounted to 14,200 tons.

All of which is respectfully submitted.

F. J. CAMPBELL, Chairman.

WOODLANDS SECTION

Mr. President and Gentlemen:

Although some important experimental investigation was carried on jointly by a few of the more important members of our section, and although very effective cooperative work in fire fighting was continued through the various protective associations, practically no constructive or progressive program was advanced during the past year by the Woodlands Section.

The members in whose hands the affairs of the section have rested during the year, do not feel that the lack of action has been due to a general lack of interest on the part of the members or because there is no work of real value to be done, but are more firmly convinced than ever that in order to map out and carry on a real constructive program, the section must have a permanent head. The idea of engaging a permanent secretary has been approved by the Executive Committee of the Association, and it is to be hoped that the necessary funds required to meet the additional financial obligation can soon be arranged for.

The work of the various forest protective associations has been followed closely by the members of our section, and the results obtained have made every one believe more firmly than evr in cooperative efforts when dealing with problems of common interest.

All the associations with the exception of one, succeeded, in cutting down to a considerable extent, the acreage burned over the previous year and this in spite of the exceptionally dry season.

The Laurentian Association used twenty-three newly erected watch towers in connection with its time clock system, and the results were most gratifying.

The plan of requiring every one who enters the forest during the dangerous fire season to first obtain a permit was adopted by the Provincial Government of Quebec, and will, in all probabiity, in the future, remain an established law in that province. This scheme was strongly advocated by both the Woodland Section and the Q. F. P. A. and the results have justified the efforts made to overcome the prejudice against its introduction.

The plan for the establishment of a school for forest rangers in Quebec which was worked out by a committee from the Woodlands Section and Mr. G. G. Piché, Chief Forester of the Province, has been adopted by the provincial authorities and the sum of $43,000 has been appropriated for buildings and plant and an annual grant of $25,000 for maintenance agreed upon.

The school buildings which might admirably be located near the nursery at Berthierville, will not be completed for the coming season, but the Chief Forester hopes to enroll a class and start a course of instruction during the spring of 1923. He should obtain the support of all those interested in forestry operations.

The use of gasoline driven tractors in logging operations has gone far beyond the experimental stage and their worth for hauling under certain conditions has been absolutely proven. In several places in the Adirondacks hardwood and spruce logs are being hauled for distances of from seven to fifteen miles at a very low cost. Some of our members are using tractors on a small scale and, after studying the matter more closely, timber situated in the back country five to ten miles from the rivers should be cut and hauled as cheaply as the timber nearer at hand.

ROBERT P. KERNAN, Chairman.

SULPHITE SECTION

Mr. President and Gentlemen:

In so far as the Sulphite Pulp industry is concerned, the year 1922 has been a time of recovery and reconstruction, after the extreme liquidation in values during 1921.

The carrying forward into 1922, at peak cost prices, of large quantities of the pulpwood out of 1920 presents a most serious problem to many mills. All of this wood cannot be converted into Pulp until the summer of 1923.

The first quarter of the past year yielded a very limited demand for sulphite. In April the market began to improve and continued to gain strength throughout the year as conditions improved.

The demand proved so strong that the usual summer dullness in June, July and August did not occur, business being up to the maximum of the year in these months.

The average deliveries during the twelve months equalled about ninety per cent of the available production.

A satisfactory feature of the year's business is the very important quantity exported to Europe from this country.

Unprecedentedly large imports from Northern Europe into the United States, our chief market, prevented any shortage of Sulphite in America because of the keen competition thus created. Naturally the end of the year saw the usual quiet demand pending adjustment of inventory and accounting affairs so that small stocks remain on hand at consuming mills until the resumption of full buying.

What will be the history of the New Year may properly remain with our successors to record, yet the majority of opinion in authoritative circles indicates business which will induce a high degree of operation in the plants and generally speaking more satisfactory net results.

The interests of this section have been materially forwarded by the President, Mr. Geo. M. McKee and his associates, particularly in the close co-operation rendered by Edward Beck, the popular Secretary of the Association.

We are glad to say that contact has been maintained throughout the year with European conditions through the interchange of visits of manufacturers, more especially from our friends, in Sweden, Norway and Finland, who have encountered most of the difficulties we have experienced on this side of the Atlantic, and now find considerable improvement in their affairs.

T. J. STEVENSON, Chairman Sulphite Section.

KRAFT PULP SECTION

Mr. President and Gentlemen

At the commencement of 1922, conditions in the Kraft Pulp industry were more favourable than they had been for twelve months or more and the year opened with a promise of better things. This promise was well fulfilled during the year and the mills reporting to the Kraft Pulp Section were able to operate to capacity for a good part of the time. Due to the general improvement in business the demand for our product kept up well throughout the year both in the United States and Canada and the increased demand was reflected in greater production and larger export figures.

There has been strong competition in the United States market from the European countries and large quantities of sulphate pulp were imported from Norway, Sweden and Finland. In spite of this, however, Canadian exports to the United States amounted to 137,188 tons for the first eleven months of the year compared with 87,308 tons for the corresponding period of 1921.

The monthly figures for Canadian exports of Kraft pulp are given below:

Month	Export Tons	Value
January	9,807	$609,943
February	11,437	690,757
March	14,415	902,254
April	8,162	511,615
May	12,575	763,505
June	13,109	801,395
July	12,887	778,948
August	12,658	774,643
September	13,503	825,789
October	14,088	875,876
November	14,546	917,560
December	11,148	714,533
Total	148,335	$9,166,818
Total 1921	99,540	7,199,218

All of our exports were sent to the United States and the total quantity shows a considerable advance over any previous year's figures although the drop in prices has affected the total value.

It seems to be the general opinion that the coming year will be one of steady business and a return to normal conditions In that case the Kraft pulp industry should share in the general prosperity along with the other branches of the pulp and paper industry.

C. R. WHITEHEAD Chairman.

Tables on next page show exports of chemical pulp.

MECHANICAL PULP SECTION

Mr. President and Gentlemen,

Those interested in the manufacture and sale of Mechanical Pulp solely from a marketing standpoint, as pulp, have a situation to contend with which is not shared by the other members of the Association. The marketing of their product is

EXPORTS OF CHEMICAL PULP FROM CANADA

Sulphite, Bleached

	1920		1921		1922	
	Tons	Value	Tons	Value	Tons	Value
January .	[illegible]	$ 599,030	3,706	$ 526,839	12,470	$ 1,072,091
February	[illegible]	553,281	3,281	431,750	8,715	756,457
March ..	[illegible]	841,699	7,866	1,005,250	9,842	920,790
April ..	[illegible]	728,669	[illegible]	254,345	8,149	654,903
May .. .	[illegible]	980,543	[illegible]	508,642	16,835	1,106,525
June	[illegible]	1,180,028	5,936	602,200	11,919	920,652
July	[illegible]	1,402,597	[illegible]	[illegible]	13,312	1,012,774
August ..	9,584	1,598,001	[illegible]	834,445	15,033	1,132,910
September	[illegible]	1,999,016	5,925	492,471	11,410	933,358
October ..	10,431	1,963,401	5,557	459,613	18,075	1,432,687
November	[illegible]	2,096,395	8,040	649,255	12,686	1,074,864
December	[illegible]	826,458	15,376	1,260,068	12,602	1,094,469
	[illegible]	$15,224,866	76,801	$ 7,540,168	151,048	$12,112,480

Sulphite, Unbleached

	1920		1921		1922	
	Tons	Value	Tons	Value	Tons	Value
January .	[illegible]	$ 1,441,056	7,165	$ 824,094	11,120	$ 631,910
February	18,986	1,461,153	5,758	481,455	10,145	594,625
March ..	25,961	2,113,162	7,645	635,755	14,988	828,453
April	19,863	1,587,236	4,937	404,380	8,317	452,564
May ..	24,138	2,237,587	[illegible]	739,263	11,277	594,580
June	33,942	3,873,975	9,363	711,664	21,500	1,086,909
July	31,328	3,822,679	11,096	990,807	24,679	1,213,700
August ..	28,742	3,820,278	7,226	489,261	17,355	852,666
September	25,672	3,361,048	11,904	762,489	28,154	1,310,640
October ..	20,128	2,800,095	13,555	852,341	18,411	885,601
November	[illegible]	2,220,424	19,725	1,138,639	26,398	1,205,781
December	[illegible]	1,939,813	19,649	1,092,460	16,101	820,317
	281,872	$30,678,506	[illegible]	$9,122,608	208,445	$10,377,746

Sulphate Pulp

	1920		1921		1922	
	Tons	Value	Tons	Value	Tons	Value
January ..	9,782	$ 618,888	4,186	$ 426,827	9,807	$ 609,943
February .	9,084	600,722	5,176	471,722	11,437	690,757
March ..	12,901	920,420	6,958	596,756	14,415	902,254
April .. .	8,179	620,728	4,905	424,130	8,162	511,615
May	11,596	1,000,862	7,503	664,685	12,575	763,505
June	11,545	1,200,406	7,341	541,488	13,109	801,395
July	12,557	1,383,104	[illegible]	390,068	12,887	778,948
August ..	13,370	1,284,365	7,634	587,664	12,658	774,643
September	13,709	1,398,092	11,259	753,418	13,503	825,789
October ..	13,954	1,827,448	12,204	743,693	14,088	875,876
November	9,155	1,123,967	14,482	854,298	14,546	917,560
Decembre	[illegible]	826,458	[illegible]	744,774	11,148	714,533
	133,145	$12,805,460	99,137	$ 7,199,523	148,335	$ 9,166,818

dep[illegible] demand based upon normal capacity production, but also depends upon the ability of their mills to operate regularly throughout the year and upon the ability of other groundwood mills throughout North America and Europe to produce normal supplies.

Groundwood pulp enters into the manufacture of practical[illegible] marketing of groundwood depend to a large extent, the marketing conditions for paper and particularly for newsprint. While it is true that the largest proportion of groundwood produced in Canada goes directly from the grinder-room to the paper machines, it is also true that most of the mills have a groundwood capacity in excess of their requirements. When market conditions are favourable this excess capacity can always be profitably employed although it is not always recognised that in bringing this surplus capacity into the market the paper mills may in course of time undermine their own market for paper. An excess supply results in falling prices and eventually gives to the purely converting mills an advantage over the self-contained producer of paper.

The manufacture of ground-wood differs from the manufacture of chemical pulp in that it is dependent upon two fundamental factors, wood and power. The question of water [illegible] the manufacturer who makes the best guess as to what water conditions are likely to be during the year is the one who will show the best balance sheet at the end of the year. As a case in point, ground-wood in July sold at $26.00 f.o.b. mill and in December sold at $42.50 f. o. b. mill, an increase of over 60 per cent. Naturally, supply and demand affect the price of all commodities but when water conditions have such a direct bearing on the situation as in the case of ground-wood, the marketing of this product becomes neither more nor less than a gamble.

It seems to me then, that there are three essential points upon which we should endeavor to obtain as complete and reliable information as possible.

1. Definite statistics to be issued monthly by the Association giving production figures not only for Canada and the United States, but also for Europe (more particularly Scandinavia).

2. Reliable information as to water conditions in the various producing districts. Such information is available for certain sections of the United States but no information is obtainable upon Canadian or Scandinavian conditions. With regard to Canadian conditions I would suggest that the Association take up this question with the Dominion authorities at Ottawa and endeavor to obtain Government co-operation.

3. A better understanding with our Scandinavian and American friends in the industry. It cannot be denied that at present there is a lack of confidence between us and naturally, the buyers of pulp use this situation to their own advantage by playing upon the feeling of mutual distrust. We cannot secure the necessary information from the European countries

unless we improve [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] friend. As retiring Chairman of the Mechanical Pulp Section, I, therefore, venture to suggest to the incoming executive a consultation with our foreign friends in this industry with the idea of making representations to the various Governments for uniform statistical information on production and water conditions.

It may be pointed out that such information is carefully compiled in the case of wheat, cotton and other crops and there is no reason why the products of the forest should not be entitled to equal consideration. It may even come about ultimately that we shall have a "futures" market in pulp, to serve the paper makers in the same way that the "futures" market in wheat and cotton serve as stabilising factors. Before this takes place, however, there will have to be set in motion complete machinery for the compilation of reliable data on all phases of the industry. From such a compilation I am sure that the paper-makers will eventually gain as much as the pulp manufacturers and I would, therefore, earnestly urge the assistance of the other sections of the Association in carrying out these recommendations. It is very desirable that the members of all the various sections of the Association should co-operate with the mechanical pulp section to endeavor to find the best solution for the unstable conditions which have existed in the mechanical pulp markets for many years. It is useless to expect adequate prices for paper so long as the surplus mechanical pulp is selling at practically the cost of production and if the ground-wood market can be placed on a more stable basis, the price of paper must automatically reflect this stability.

After all mechanical pulp is the basic factor in the paper industry, a fact which the paper producer often fails to recognise. Canada's position as a paper producing country rests ultimately upon cheap power and an abundant supply of wood which together mean mechanical pulp.

The surplus production of this commodity amounts to about 20 per cent of the total but owing to a lack of sufficient knowledge of production and marketing conditions this surplus is allowed to exercise an influence detrimental to the interests of the paper produce and of the industry as a whole.

FRANK W. CLARKE, Chairman.

TRANSPORTATION DEPARTMENT

Since the last annual meeting, the headquarters of your transportation manager, which were moved from Toronto to Montreal in November 1921, have been transferred to the offices of the Canadian Manufacturers Association, in room 113 Board of Trade Building, the manager, in addition to his duties with your association, taking over the handling of transportation matters for the Quebec Division of the Canadian Manufacturers Association.

Early in the year numerous hearings of the Board of Railway Commissioners for Canada were held in Ottawa, in connection with reductions in freight rates. At these hearings your Association was represented by the Manager of the Transportation Department. Efforts were made by us to have the Board issue an order that the Railways should reinstate all rates in effect prior to September 13th, 1920, (the date of the 40 per cent increase) on all raw materials used by pulp and paper mills, it being represented by us that substantial reductions in existing rates on pulpwood, coal, etc., were necessary to enable us to reduce our manufacturing costs and compete with foreign mills. Owing to the action of Parliament in recommending that the C. P. R. reinstate rates on grain embodied in the Crows Nest Pass Agreement, the Board ordered but few other reductions, among the commodities which were reduced and which affected your industry, being pulpwood, coal and lime.

During the past year some of your members found difficulty in competing on the Pacific Coast with different kinds of paper which were reaching that market from European and Eastern United States Mills through the Panama Canal. After negotiating with the Railways we were successful in securing substantial reductions in all rail freight rates from Eastern Canada to Vancouver, etc., the reduction in some lines being from $1.77 1-2 per 100 lbs. to $1.20 per 100 lbs. I am advised that an increase in the business of Eastern Canadian Mills to the Pacific Coast has resulted.

The usual car shortage was experienced throughout Canada and the United States last fall, but replies to a questionnaire sent out by this department to members of this Association would indicate that little inconvenience was suffered in consequence.

The Railway Companies in Canada have now in course of preparation Canadian Freight Classification No. 17, which will supersede present Classification No. 16. In the new issue they propose various increases in rates and minimum carload weights. The transportation department is issuing a circular to all members setting forth in detail the proposed changes, and on receipt of replies a meeting of those interested will be held and any objectionable features in the proposed classification taken up vigorously with the Railways with a view to having them removed. Among other matters the Railways are proposing to penalize shipments of boots and shoes in fibreboard cartons, and we are working closely with the Boot and Shoe Manufacturers Association in efforts to avoid this.

Expense bills are being checked for a number of members with satisfactory results.

Correspondence with regard to freight rates, claims, etc., is being received continually, and promptly attended to.

Yours respectively,

G. P. RUICKBIE, Transportation Manager

EXPORTS OF MECHANICAL PULP FROM CANADA

The following table gives the exports of Mechanical Pulpfrom Canada for the past three years:

	1920		1921		1922	
	Tons	Value	Tons	Value	Tons	Value
January	30,460	972,574	6,698	$ 396,136	28,608	$1,140,071
February	13,341	472,383	4,323	244,049	13,222	405,649
March	14,455	562,308	6,993	284,092	19,525	562,937
April	9,933	506,369	3,204	131,427	6,448	179,214
May	13,972	779,710	16,315	754,288	11,912	278,551
June	44,615	[illegible],136,767	9,805	370,072	37,556	968,396
July	[illegible]	[illegible],528,993	20,449	974,246	26,873	694,356
August	[illegible]	[illegible],809,266	21,798	1,233,684	39,758	1,306,728
September	21,234	1,877,053	32,901	1,674,042	36,968	1,107,882
October	[illegible]	1,986,807	27,859	1,031,859	26,435	742,303
November	13,198	[illegible]	35,609	1,065,700	32,961	997,007
December	[illegible]	[illegible],926,392	37,539	1,112,117	30,149	997,712
	[illegible]	$17,574,806	223,493	$9,271,712	310,415	$ 9,380,805

TISSUE PAPER SECTION

To the President and Members
of the Canadian Pulp & Paper Association

The tissue paper situation during 1922 was in a general way satisfactory. There was some interference from United States mills as usual with the lower grades of toilets and paper towels.

There were practically no wage reductions in 1922.

It should be understood that tissue mills almost invariably make considerable paper heavier than tissue, that is to say, heavier than a 17 lb. basis. There was, however, in 1922 a production of actual tissue of 3,155 tons against 2,244 tons in 1921. The actual tissue shipments for 1922 were 3,093 tons against 2,374 tons in 1921. One new Canadian tissue mill has commenced operations in New Westminster, B.C. We understand that this mill is running one M.G. machine and that it is the intention of the Westminster company to convert a substantial portion of its products into paper speciallities, such a toilets, napkins, towels, etc.

Respectfully submitted,
GEORGE CARRUTHERS
Chairman

ADDRESS OF MR. THOMASON

Continued from page 110

tempting to buy newsprint from you at prices that we know may prove ruinous to certain of your members. I believe the time is coming when our mutual education will have progressed to the point that we will, both of us, understand that neither of us, in this division of profits that accrue to our joint industries, can make money at the expense of the other in the long run.

Now I have talked too long. I have a friend in Chicago who recently opened a new merchandising business on rather a large scale and he had to employ a large number of young women as clerks. He prepared some cards for these young ladies to state their qualifications on. The first line said "Nationality" with a question mark and a blank to be filled in. The next said "Descent." A great many cards came in upon the second day. On one card opposite the "Nationality" the answer was "American", and after the word "Descent", the answer was "Yes".. I believe the time is coming when our mutual relations and our understanding of our mutual dependency is going to be more than "descent"; it is going to be intelligent.

Remarks of Mr. George Chahoon, Jr.

MR. GEORGE CHAHOON, JR.: Gentlemen, I have a note here from our new President intimating that to myself has fallen the honor of moving a vote of thanks to Sir Edmund Walker and Mr. Thomason for their speeches. When I received that note I tried to concentrate my thoughts but I found I could not do so while Mr. Thomason was speaking. But when I had an opportunity, I said to myself: "You know you are not ordinarily called upon to talk until the evening," but, I understand it, they have cut that out. The thought that struck me first was, what a wonderful day it was when you had a disappointment in the morning and a great happiness towards evening. When we met this morning — I do not know whether you all danced last night as I did — there was a little question of some $30,000 that the industry wanted for research work. We were all conservative — we voted against it — if not to our shame at least to our sorrow and greatly to my disappointment, but we have attended this luncheon and our disappointment has been offset and recompensed by what we have heard today. We have got more than the return on an investment of $30,000 from the remarks that we have heard from Sir Edmund Walker and from the ideas that we have received from the man who perhaps knows the manufacturing part of the business as well as any publisher alive. Therefore, it gives me great pleasure to move a vote of thanks and of appreciation to both Sir Edmund Walker and Mr. Thomason for what they have been good enough to say to us this afternoon.

The motion was declared carried.

This concluded the luncheon.

NEW RAILROAD BRINGS WOOD TO ABITIBI

The Abitibi has installed a third slasher in order to handle pulpwood brought in by the new railroad. It is situated on the spur line off the pulp mill track. The cars as they come over the Abitibi Railway and Navigation Company's line are spotted opposite the slasher. The automatic stakes are triped and the logs run down into a pit at the bottom of the jackladder, with a capacity for one full carload. The logs are then fed onto the jackladder in the usual way.

The capacity of the slasher is 1200 cords a day, which is more than the ordinary supply required by the mill.

The refuse from the slasher is carried on a belt conveyor to the boiler house where it is used for steam purposes.

TIMBER PURCHASE OF 2,000 SQ. MILES

At the biggest sale of Government timber limits yet held in Quebec, the Ontario Paper Company of Thorold, Ont., today contracted to purchase timber covering 2,000 square miles situated in the River Manicouagan District on the North Shore.

The Company which is understood to be acting for Chicago Tribune interests and which outbid the Industrial Development and Service Corporation and the Gulf Pulp and Paper Company, got the limits for $3.35 per square mile plus the cutting tax now $2.70 per thousand feet of timber.

The contract calls for development of water power on the property and company engineers will at once study the territory preparatory to erection of a pulp mill.

PULP PLANT CHANGES HANDS

Work is to be resumed at the pulp mill on Water street. The plant was purchased from the trustees of the old Cornwall Pulp and Paper Company by W. W. Thomson of Toronto, who will carry on the business under the name of the Glengarry Pulp Co. Mr. Thomson is here this week arranging for the immediate resumption of operations and the work of getting the plant in order has made rapid progress. It is expected to have the plant in full operation in the course of a few days. A large number of men will be employed. The new manager is C. J. Shepherd, of Toronto, who is taking up his residence here.

DONNACONA BOND ISSUE

Announcement is made by Royal Securities Corporation that the issue of $750,000 of Donnacona Paper Company 6 p.c. first mortgages sinking fund gold bonds has been oversubscribed.

The assistant pastor, the silent unanswerable assistant who works at night and in the morning and in the hours of leisure, is the church paper.—*Bishop Stunte.*

A Survey of Conditions in the Pulp and Paper Industry

By the Secretary of the Canadian Pulp and Paper Association

At the opening of this, the tenth annual meeting, of our Association a brief retrospective survey may perhaps be in order. The decade of which this meeting marks the termination has witnessed the evolution of our industry from a position of minor importance to one of the first magnitude, if, indeed, it cannot now be said to dominate in most respects Canada's manufacturing industries. Its growth has been at once so extensive and so rapid that only when we stand aside, as on occasions such as this, and give consideration to its progress can we begin to appreciate it at its fullest extent.

Mere figures are at best uninspiring but it is worthy of note that ten years ago the paper industry was so little regarded by the Dominion Bureau of Statistics that no records were made of its activities. Attempts were made by another government department to compile Annual returns showing the amount of pulpwood consumed in Canada, but little adequate official information as to the industry as a whole is available for any year prior to 1917 when the present system of compiling an annual census was inaugurated.

The lack of official records for the year 1913 makes it difficult to draw comparisons between that year and those given in the census of 1921, the latest available. However, there are some figures which can be used. For instance, in 1913 there were 64 mills in operation, while the 1921 figures show 100 mills operating, an increase of 56 per cent. In 1913 the consumption of pulpwood by Canadian Mills was 1,109,034 cords compared with 2,180,578 cords in 1921, an increase in 1921 of nearly 100 per cent. Our production of newsprint in 1913 amounted to 350,000 tons; in 1921 the production was 805,114 tons or 130 per cent. greater while in 1922 it exceeded 1,090,000, or an increase of 300 per cent. in the ten year period. Total woodpulp of all kinds produced in 1913 amounted to 854,624 tons; in 1921 it amounted to 1,544,027 tons, an increase of 80 per cent.

Thet government records start with the year 1917 and the latest compiled are those covering 1921. Taking these two records for comparison, covering a period merely four out of the ten years, it is shown that the total number of establishments increased from 83 to 100 or 20 per cent.; the invested capital from $186,787,405 to $379,812,751, or 117 per cent.; the amount paid in wages and salaries from $20,358,019 to $34,199,090, or 68 per cent and the total value of the output from $96,340,327 to $151,003,165, or 56 per cent.; the total paper tonnage from 853,689 to 1,021,941 or 20 per cent.; and the total pulp tonnage from 1,464,154 to 1,544,027 or 5 per cent. In considering these figures it must be taken into account that 1921 was not a normal year for the industry. When the figures for 1922 are available the contrast will be found to be much more pronounced.

Our pulp and paper exports, which offer a better criterion for judging the growth of the industry during the ten year period rose in value from a total of $11,850,632 in the fiscal year ending March 31st, 1913, to $163,655,344 for the year ending March 31st, 1921, an increase of 28 per cent.

What has been the history of the Association during this period of extraordinary expansion and what part has it played in helping to bring about this great development. The Association as many of the members can recall had its inception in the desire of a number of progressive leaders in the industry for some organized co-operative effort to further its interests. The first and preliminary meeting was held in Toronto on March 8, 1913. It was attended by the representatives of some twelve different concerns. This meeting adopted a resolution setting forth that "In the opinion of those present it is advisable and highly desirable that we should form a Canadian Pulp and Paper Association." A committee on organization was appointed. The Committee reported at a subsequent meeting held in Montreal on March 18th of the same year and on the following day the Association was formally launched at a luncheon held at the Windsor Hotel. The guest of honor was Mr. Arthur C. Hastings, the then president of the American Paper & Pulp Association, who brought to the occasion the blessing and good wishes of our United States prototype. It is pleasing here to note that the friendly relations then inaugurated between the two corresponding bodies have since been maintained and intensified. Mr. Carl Riordon was the first president and to his enthusiasm and activity the Association owes a great deal of its initial success. The first executive Council was composed of Messrs. Carl Riordon, T. J. Stevenson, A. F. Cayford, I. H. Weldon ,D. Robertson and C. Howard Smith, all of whom, with one exception, are still actively interested in the Association's affairs. Some of the activities which engaged the early days and which still enlist our interest had to do with the gathering and dissemination of trade statistics, the establishment of trade customs, the encouragement of the consumption of home products as opposed to unnecessary importations, the tariff, transportation, the betterment of labor conditions, the regulation of

MR. GEO. M. McKEE,
President, Canadian Pulp & Paper Association, 1922

credit, technical research and industrial efficiency and similar matters.

For a time the organization met with hard sledding. The value and usefulness of a trade association was not so generally appreciated in the early days as they are today. The first year closed with a financial deficit, but the succeeding year brought about a reorganization on a more substantial basis and from that time the course has been upwards.

In 1915 the Technical Section was accorded recognition and taken into the Association as an associate body. Two years later the Woodlands Section was organized and accorded a similar status. Both of these auxiliary associations are, as is shown by their reports submitted at today's meeting, fully alive and engaged in work of great benefit to the industry.

It was in 1917, also, during the administration of Mr. C. Howard Smith as chief executive, that Mr. A. L. Dawe was engaged as the Association's permanent Secretary, from which time the growth and progress of the organization has been both rapid and healthful. To Mr. Dawe's energy and enterprise it owes not a little of its present gratifying standing. It is no idle boast to say that the Association today enjoys a reputation second to none among the trade organizations of the Dominion, while it is also not infrequently cited by authorities in other countries as an example of what an active and helpful trade organization ought to be.

So much for past history. What about the year 1922 just closed? In considering the immediate condition of the industry we must remember that the year 1921 was one of depression and difficulty; it was also a year of reorganization and reconstruction. Towards the end of that year, however, the situation began to look a little clearer and we entered upon 1922 with a more optimistic outlook, prepared for twelve months of steady, if slow, progress. The year which has just closed fulfilled our expectations and although we had no sudden return to peak prosperity we have experienced a steady growth and development and we feel confident that our industry is now on a solid and sound basis so that we can look forward with cheerful optimism.

During the past year there has been a large increase in the production of practically all grades of pulp and paper over the previous year. One production of newsprint was well over one million tons, compared with 812,000 tons in 1921. Production of wrapping paper, book and writtings have also increased considerably and the production of the various grades of pulp showed increases ranging from 35 to 100 per cent.

This increased activity has naturally been reflected in our export figures which show a great advance over the figures for 1921 and in some cases over these for 1920, which was the previous record year.

Exports of mechanical pulp increased from 185,954 tons in 1921 to 280,266 tons in 1922; bleached sulphite from 61,420 tons to 138,446 tons; unbleached sulphite from 107,738 tons to 192,344 tons and sulphate from 87,498 tons to 137,187 tons.

Exports of newsprint amounted to 874,008 tons compared with 636,487 tons in 1921. Kraft wrapping 17,061 tons compared with 5,940 tons and while the fine papers did not show increases there was a steady growth in the second half of the year which augurs well for the coming year.

In spite of the decline in prices which has taken place the total value of the exports of pulp and paper in 1922 amounted to $105,624,324 compared with a total of $98,319,087 in 1921.

During the year there have been extensive additions to existing plants and several new mills have been brought into operation. The newsprint capacity in 1922 was 3,825 tons per day and additions in the near future will raise this figure to about 4,200 tons daily. There have also been additions to the producting of our pulp and fine paper mills and further additions are planned during the coming year. All of which indicates confidence in the situation and gives ground for the expectation that the year 1923 will be a record year in the history of the industry.

Insofar as the affairs of the Association are concerned the past year has been marked by no especially outstanding event. The several Sections have functioned as usual. Their individual records will be found in their annual reports submitted at this meeting.

Early in the year, the Executive Council made provision for increasing the usefulness of the Statistical Department by the addition of an expert statistician to the staff. Experience has taught the value of authentic and seasonable reports as to the extent of the output of the various branches of the industry and other information from both at home and abroad. The usual weekly and monthly reports on production, shipments, etc., have been issued at regular intervals during the year and together with the charts sent out each month have served to keep the members informed on the general situation. The interchange of information with the Scandinavian Cellulose Association has also been maintained and has proven of value to the members of the Chemical Pulp Sections. Efforts are under way by which it is hoped to initiate a similar exchange of information covering mechanical pulp. An exchange of information covering newsprint production has been carried on with the Scandinavian countries, Finland and Germany and regular reports have been sent to the members interested. A considerable number of new reports have been issued since the spring, some at regular intervals, other as special occasions have directed. Assurances have been received that these reports have proved of interest and value to the members. As the value of trade statistics depends largely upon their timeliness, the co-operation of the members is essential to the usefulness of this service, a fact, which the members should all bear in mind.

The Transportation Department has continued to operate in connection with the Montreal headquarters of the Canadian Manufacturers' Association and has rendered useful service. In several instances adjustments of freight charges have been obtained from the railways to the advantage of our members.

Notable advancement has been made in connection with the spread of technical education. A correspondence course in paper-making, based upon the series of textbooks published by the Joint Educational Committee, has been established with the sanction of the Council. It promises to perform a very useful service. A committee composed of Messrs. F. J. Campbell, George Carruthers, and O. F. Bryant represents the Association in the carrying on of this work.

Summer employment in the mills was found for some 33 college undergraduates through the agency of the Association's headquarters. This is not so many as in former years, trade conditions in the early part of the year militating against this activity.

Tariff matters have, as usual, engaged the attention of the executive from time to time, necessitating the employment of legal counsel as well as the appearance of our representatives before the various authorities. Quite a large bill of expense was incurred in this connection, as will be seen by the financial statement, but the Executive Council is satisfied that the outlay has been justified by the results obtained.

The membership stands numerically unchanged although four concerns have withdrawn during the year. These withdrawals were due to changes in ownership, to financial considerations or other valid causes. Four new members were admitted and a Waxed Paper Section was added to the list of Sections.

The Quebec and Ontario Committee appointed at the last annual meeting to confer and advise with their respective provincial governments have carried out the instructions accompanying their appointment with more or less satisfactory results.

An important conference between the Joint Committee on Technical Research and Sir Arthur Currie, the Principal of McGill University and members of his faculty, was held in November at which the future of the Paper Division of the Forest Products Laboratories and the proposed establishment of a chair of Chemistry in the University were discussed. The way was paved, it is believed, for important developments in the near future.

The Text Book Committee has made progress during the year and will give an account of their stewardship at this meeting.

The Association had the misfortune, towards the close of the year, to lose the active services of Mr. George M. McKee, who was elected president at last year's annual meeting, Mr. McKee having transferred his business interests across the border into the United States. Despite the unanimously expressed desire of the members of the Executive Council that Mr. McKee continue in office to the end of his term, he felt it incumbent upon him not to do so. During the eleven months he held office Mr. McKee was zealously active in promoting the welfare of the Association and earned the gratitude and goodwill of his associates in office as well as those of the membership at large. The regret universally entertained over his departure from our immediate midst is mitigated to some extent by the knowledge that he has merely stepped across the imaginary boundary line that divides the two countries and that, since he continues his association with the industry, we may still regard him as one of us in everything that pertains to mutual interest, friendliness and good-will.

It is gratifying to be able to report that the finances of the Association are in a sound condition, as may be seen from an examination of the Financial Statement. The balance to the credit of the funds is the largest in the Association's history.

Satisfaction over past achievements should not lead us to underrate the possibilities of the future. There is no reason why our industry should not continue to expand and to keep pace with the growth of the country and with the natural increase in the universal demand for its products. Possibly, however, we may be going ahead a little too rapidly. Overconfidence as to an unabated continuance of the present demand for our products may lead us into undue or too rapid development. There are already danger signs in one or two directions that the saturation point is in sight. We should guard against unnecessary and excessive production, which is apt to prove as unprofitable and undesirbale for the consumer as it is for the producer.

When it is considered that the newsprint mills of Canada, now in operation, or under construction, or for whose construction provisions have been made, are committed to a program which will give them a combined output capacity of 4,315 tons a day, or practically 1,300,000 tons a year by the end of next year; that production in the United States is also due for an increase, attributable to new machines now in process of installation, that the total demand for this class of paper on this continent, practically our only assured market, at its maximum had never exceeded 2,500,000 tons a year, that United States production has never failed to equal at least 58 per cent. of this demand, and that the tonnage due from Canada by the end of 1924 will equal 57 per cent. of the greatest volume of consumption in any one year, the figures may naturally invite a question as to whether expansion has not reached or is it approaching the danger line?

Similar conditions may be said to apply in lesser degree to the production of groundwood, sulphite and the finer grades of paper. If expansion is to go on at its present rate it is inevitable that new markets must be explored. Where are they to be found? How can we best meet the competition that we shall be faced with when we find them?

These problems and others the members will find are intelligently dealt with by the chairmen of the several sections in their annual reports submitted to this meeting, reports which this year are of more than ordinary interest and will well repay the study of the members. Upon their resolution depends in a large measure the future of our industry and, incidentally, the welfare of this Association.

The Association exists for the purpose of helping the industry to solve first such problems such as these and the measure of its success in so doing will be the measure of its usefulness to the members. But the Association cannot function as it should unless it has the united and loyal support of its entire membership. The year now opening may prove a critical one for the organization— one to test the ability and ingenuity of the incoming executive as well as the steadfastness of the members. Proposals are to be brought before this meeting marking out an entirely new and broad line of departure from past policies. They should be considered on their merits and dealt with as may best accord with the interests of all the members.

One of the activities that should be enjoined upon the incoming executive is that of adding to the membership so that it may be said to represent as nearly as may be 100 per cent. of the industry. Special effort should be made to enlist the new concerns which have recently come into being. Some field work is essential. The newly-elected chairman of the Sections should be requested to assist in this effort. The Association is not a closed corporation. Its work is directed towards the general good of the industry and for that reason it is entitled to and should be accorded the united support of all. What has been said of trade associations in general applies particularly to our own organization. It is built upon a fundamental principle and is the result of economic evolution. It comprises a partnership in all legitimate and lawful undertakings — a partnership which embodies the democratic doctrine of the greatest good to the greatest number. It provides a means for applying the democratic ideal in business that can be found nowhere else in no other way. With a continuance of the support given to it in the past, it must and will go on to greater things and enlarged usefulness in the future, and during the ensuing ten years discount the achievements of the past, however noteworthy and substantial these may now appear to us to have been.

A new couch roll head was put on No. 7 machine at the Abitibi mills last month, and is working with entire satisfaction.

PULP AND PAPER NEWS

A fine job was done at the Abitibi Pulp & Paper Mill last month when the bottom cone of one of their big digesters was relined in just 60 hours, and the cement was set 48 hours later, and steam turned on with operations resumed.

Readers of the Pulp & Paper Magazine will be very sorry indeed to learn of the illness of Mr. R. A. McInnis, manager of the Abitibi Mills. Mr. McInnis was taken to Toronto for treatment and recuperation, and his early recovery is earnestly hoped for. His presence was very much missed at the annual meeting of the Pulp and Paper Association.

Mr. Joseph A. Borden, director of general service for the American Writing Paper Company, states that perhaps the most significant and encouraging facts the new year presents to the printing industry of the United States, is the continued growth of magazine advertising, which began early in 1922 an increase in advertising invariably indicates the growth and development of new industries which is not possible except under improving business conditions.

The Howe Sound Pulp and Paper Company, Limited, Toronto, has been incorporated with a capital of $5,000.

Mr. J. MacLaurin, woods manager of the St. Maurice Paper Company, Limited, Montreal, is back to business after a week's absence owing to illness.

With a view to develop the pulpwood and other forest products, the five colonization parishes north of Mont Laurier, P. Q., are asking the C. P. R. to extend their line 30 miles beyond the present terminus at Mont Laurier.

Mr. Angus McLean of the Bathurst Company, Limited, Bathurst, N. B., is the new president of the Canadian Lumberman's Association.

The head office of the Provincial Paper Mills, Limited, Toronto, reports that they have booked orders for heavy tonnages of book paper from their new book paper mill at Port Arthur and that the outlook for business for the new plant is exceedingly bright. Good progress is being made with the equipping of the plant and the mill should be in full running order very shortly now.

The Fort William Paper Company, Limited, are now shipping paper from their new mill at Fort William. No. 1 Machine is just in the tuning-up stage and is turning out paper to the extent of about half its capacity. Work is in progress on the installation of the second machine.

In a statement just issued, Percy B. Wilson, Vice-President of the Spanish River Pulp and Paper Mills, Limited, says: "As regards the outlook for 1923 everything looks very favorable in our trade for the continuance of good business showing a fairly reasonable percentage of profit. The demand for our products has been good throughout the year while prices have been low. The condition of the market for raw materials was easier early in 1922 and up to midsummer. Since then prices have been generally increased in some cases more than wiping out the reductions that had taken place earlier in the year. In general, raw materials have not been reduced in price to the same extent as has our manufactured product. There have been some wage reductions. Efficiency of our employees increased from the middle of 1921 to the end of the year, and has maintained this improvement during 1922."

Mr. Justice Middleton in Toronto last week dismissed the action for $40,000 instituted by the Attorney-General of Ontario on behalf of the King and Golden Lake Lumber Company, Limited, against J. R. Booth of Ottawa. The Attorney-General alleged that Booth had trespassed on limit 122 and had cut 200,000 feet of pine timber and logs valued at $40,000. The question resolved itself into one of disputed boundaries.

The annual meeting of the Ratcliffe Paper Company, Ltd., was held a few days ago in Toronto when the annual statement showed a satisfactory business record for the year just closed and expressed confidence in the coming twelve months. F. L. Ratcliffe was elected President: T. E Gain, Vice-President and M. J. Ratcliffe secretary.

At the annual meeting of the Toronto Board of Trade last week F. L. Ractliffe, of the Ratcliffe Paper Company, Ltd., was elected as one of the Board's representatives on the National Exhibition Board. S. B. Gundy, President of the Oxford University Press, was elected a member of the Council of the Board.

F. J. Hathaway, of the executive staff of Harwick Bros. & Rutter, manufacturing stationers, Toronto, has been appointed as representative of the Toronto Board of Education on the Toronto Public Library Board, succeeding Judge Denton, who has retired.

Additions to the plant of the Dryden Paper Company, Limited, Dryden, Ont., including a water power development of 1,400 h.p., a specialty papermachine and a new groundwood unit, are expected to be in operation within the next three months. These additions should add materially to the earning power of the company, particularly in view of the improving conditions in Dryden products such as kraft paper and kraft pulp.

The independent negotiators trying to arrange a 15,000 horsepower contract between the Hydro and the Great Lakes Pulp and Paper Company have about come to terms after frequent conferences in Toronto with L. A. Allstead, representing the company and it is likely that a contract will be submitted to the Hydro Electric Power Commission within a few days time. It is understood that Messrs. Haney and Ross, members of the Gregory Commission, assisted by Lloyd Harris, are the independent parties who have been working on the proposition with the approval of the Drury Government. It is stated that they found Mr. Allstead a hard bargainer. The contract has to do with the Nipigon power system, which is running behind $300,000 per year at present. This fact may have made the company feel that it could exact favorable terms. On the other hand the company will not be taking power for two years, and will be unable to get power from any other source. One of the hardest matters to adjust was the mutual enforceability of contract. The company claimed that if it were compelled to take a block of power whether or not a strike was on in its plant, or other mishap occurred, then the Hydro should be under an obligation to furnish power, no matter what its difficulties.

UNITED STATES NOTES

Expected improvement in the demand for wallpaper has been delayed, but there are evidences now, according to New York manufacturers, that it is beginning to materialize. Increased apartment construction and general home refurnishing for Spring are the main influences tending toward expanding demand. Another reason given is the fact that people are growing tired of the monotonously colored papers, especially those having stipple effects. A higher range is being demanded and there is a disposition to favor the use of figured papers. This type is expected to bulk large in the demand for Spring.

A statement as to the aims of the American Tree Association, says: "After three years of endeavor to unite the foresters on a national forest policy, Charles Lathrop Pack has organized the American Tree Association which will devote all its energies to secure the nation-wide planting of trees. Mr. Pack sees that the demand for a national forest policy must come from the people and not from any one group of foresters, lumbermen or timberland owners, as the people are vitally interested in having steady and permanent output of forest products. Up to now the foresters have not been able to agree upon a form of forestry policy so Mr. Pack has determined to devote himself to the value of tree planting."

One man was buried alive and scores of others narrowly escaped the same fate when a basement wall of the International Paper Company's mill at Lawrence, Mass. collapsed last Thursday. The body of Peter Ferelli, the victim, was recovered.

According to statistics just issued by H. D. Sayer, New York States Industrial Commissioner, the average weekly earnings in 1922 in the paper and paper products industries were marked by general increases. The largest was that of $0.72 in the printing and book making establishments. The average weekly earnings of factory workers in the State in 1922 were $26.39, a gain of $1.48 since December, 1921.

Discussing a recent trip to Alaska before Army and Navy Club members in Washington, D. C., Sherman Rogers of New York, declared that southeastern Alaskan spruce forests in the very near future will be supplying from 30 to 50 per cent. of the newsprint used in the United States. "Natural harbors," he said, "are found throughout the entire section and there is abundant water-power to develop the pulp industry of the territory to such an extent as to stabilize American pulp prices indefinitely and at the same time pour millions into the United States Treasury without reducing the timber supply. Alaskan timber grows from two to three times as rapidly as the timber in the forested States of the Union, due to the heavy rainfall, and with the forestry regulations now in effect all small timber will be left, resulting in complete reforestation every fifty years. The timbered areas of Alaska are within forty-eight hours by steamships from Seattle, and the freight rates will not prohibit competition in the world's markets."

The International Paper Company will have an entirely new source of revenue in the last half of the current year. Officials of the company expect that the 50,000 horse power hydraulic plant under construction near Glens Falls, N. Y. will be completed in June. The company has contracts calling for the full output of the plant. The plant will represent an investment of more than $3,000,000.

Forecasts in Wall Street have it that the International Paper Company's report for 1922 will show an operating loss of between $2,000,000 and $3,000,000 and that depreciation and charge on inventories will be almost as large. This would means a deficit for the year of over $5,000,000. compared with a deficit in 1921 of $9,000,000. A better showing, however, is looked for in the coming year.

A $4,000,000 increase in the Capitalization of the St. Regis Paper Co. was authorized at the annual meeting of stockholders held in the offices of the company at Watertown, N. Y., recently. The action was taken to enable the directors to undertake any further future expansion, either in buying other properties or to permit mill developments and improvements.

KEENAN TAKES NEW POSITION

Thomas J. Keenan, known to the entire paper industry through his long years of work with the Technical Association, and also from his contact with the industry as editor of "Paper", has retired from the editorship of "Paper", to give his entire time to the coming Paper Industries Exposition. Mr. Keenan was originally named as a member of the Advisory Committee from the Paper Industry for the Exposition, but has, because of his experience in the paper industry, been secured by the management of the Exposition to give his entire time to aiding the management in the work of planning for the big paper show. Mr. Keenan was one of the organizers, and for many years Secretary, of the Technical Association of the Pulp and Paper Industry, and in securing him the Exposition management has made a notable addition to the staff which will handle the Exposition, the week beginning April 9th.

$651,484 FOR CHICOUTIMI PULP LOSS

The sum of $651,484 is by a majority award of a Court of Arbitration, issued on Saturday, ordered to be paid to the Chicoutimi Pulp Company, Limited, under policies with thirty-two insurance companies for loss sustained through the fire which on July 8 last destroyed about 28,000 tons of mechanical pulp in the Chicoutimi Company's yards at Port Alfred, near Ha Ha Bay.

The Chicoutimi Pulp Company claimed $1.010.201.31 fire insurance, but the insurance companies considered the demands made on the policies were too high, and arbitration was resorted to under the provisions of the Quebec insurance law (Article 7934, paragraph 16 of the Revised Statutes).

The insurance companies named the Hon. A. W. Atwater, K.C., as their representative in the Court of Arbitration; claimants appointed A. F. C. Ross, chartered accountant, to the court; and Messrs. Atwater and Ross named as third arbitrator and chairman of the court the Right Hon. C. J. Doherty, K.C.

One who frankly confesses himself to be in the wrong when, he is, will be found mostly in the right.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, January 30. — Locally business in the paper trade is quite satisfactory. The first month of the year has shown an increase in activity, with indications that trade is getting down to a basis which will mean a steady volume of orders. We are, in fact, on a much better plane as compared with even six months ago, and provided we are assured of something like stable values, there is every reason to believe that we may look for business which will yield a fair return.

While there is every evidence that 1923 will be a profitable one for the pulp and paper industry as a whole — in fact production in some sections will be the largest on record — a spirit of caution is already beginning to show itself. The lesson of the great boom and the disastrous reaction has been learned. A strong demand and good prices are of course desired, but the industry has been taught that it is possible to force the pace at a dangerous rate. Mr. E. Beck, in his survey of the industry read at the annual meeting of the Pulp and Paper Association, indicated the possibility of over-production, particularly with regard to newsprint. The new plants and the contemplated extensions will mean a great addition to Canadian tonnage, and fresh markets will have to be found for this, otherwise the market will be swamped with production, which will inevitably result in lower prices.

In most lines during the past week there has been a moderate turnover. A fair amount has been in writings, ledgers, and bonds, tissues have been in good demand; while wrappings have shown activity. Boards are also good, the domestic demand, which in 1922 exceeded that of 1920 by over 10 per cent. being still satisfactory.

The pulp section is inclined to be on the slow side. Groundwood, for which there was such a strong demand, has reacted, the price now being down to about $42. Bleached sulphite is in steady request, while sulphite is rather dull.

Toronto Market News

Pending the outcome of deliberations of the various sections at the annual meeting of the Canadian Pulp and Paper Association, manufacturers and distributors of paper would not venture on a prophesy as to what the immediate future holds in the way of price changes but it seems unlikely that anything very drastic will be announced until further conferences are held. That there will be some changes and that there will be few, if any, recessions is the general opinion in the trade, for jobbers as well as the mill men say that that overhead, raw material, labor and most everything else entering into the manufacture of paper is still on the increase and that in most lines more money should be got for the product. Business on the whole in the Ontario paper field is fairly good although in some cases rather spotty. For instance some of the book paper mills report good business while others say the demand, for the moment, appears to have fallen off some and that orders are none too numerous. Bond papers are in the same class in this respect and in most lines January appears to be closing with a rather reduced activity. The month, on the whole, however, has been a good one both or the producer and the distributor and while the placing of big orders for any line of paper has not been general the month will bulk up well in the total of small tonnages at the mills and small orders from the jobbers. Generally speaking the trade is satisfied with January as an index to the business that is opening up.

WALLPAPERS—Toronto wallpaper manufacturers, who are large users of paper, say that the market for their product in Canada has been, and continues to be active. In the export field more business was done last year than in any previous year. Raw materials have been in good supply and at somewhat lower price than prevailed during the years immediately preceding 1922. Labor has been readily obtainable and help was more competent. The outlook generally is pronounced as favorable. E. G. Staunton, President of Stauntons Limited, states that the Dominion market is buying in considerabl greater volume from his company than has been the case for some time, although trade cannot be said to back to its normal state yet. There are indications, however, of a steady improvement, although the public is still fearful of buying beyond their immediate requirements. Export markets for wallpapers are improving slowly and it is believed in the trade that repeat orders in the spring of 1923 will be big as customers certainly have not overbought and they all seem to have enjoyed a brisk business during the year just closed.

TWINE — Manufacturers report the demand for twine as somewhat slow and erratic and in some cases, particularly in jute, much price-cutting has been in evidence. It is stated, however, that the coming months will show a slow but steady improvement both in demand and stabilization of prices as there are no stocks of manufactured goods being carried in the Toronto district of any extent and it is thought that the dumping from Dundee and price-cutting locally will not last much longer. This, is stated, should restore needed confidence to the consumer. Some manufacturers, it is stated, find it difficult to compete with German manufactured twines which are marketed through Dundee and it is said that in many cases twine has been offered to the consumers in Canada at lower prices than those asked for the yarns from which the twines are made. The absence of a duty on yarns of jute and hemp makes it impossible for manufacturers to make any success of the yarn-spinning end of the business. There is general optimism as to the outlook for the present year.

NEWSPRINT EXPORTS

Exports of Canadian wood pulp and newsprint decreased somewhat during December, according to statistics issued by the external trade branch of the Bureau of Statistics. In December, exports of newsprint paper were valued at $6,127,922, in comparison with $6,733,078 in November. Exports of wood pulp, all classes, totalled $3,627,031 in December, and $4,195,212 in November.

NEW YORK MARKETS

New York, January 27 — Special Correspondence.

Increasing activity is noted in all branches of the paper industry. There is a growing demand for nearly all kinds of paper and board, consumers are not only coming into the market more frequently as buyers, but they also are placing orders for larger amounts of paper, and manufacturers and jobbers in general express satisfaction with the market situation. Not only is there a big contract movement of paper of most kinds but the spot demand is unusually lively and is gradually assuming broader proportions. Developments during the past few days have not been all that manufacturers could desire in the way of favorable conditions, there having been further advances recorded in many descriptions of raw material, and weather conditions, particularly through the New England States, having been such as to delay the normal movement of raw material to manufacturing centres and of finished paper to the big consuming districts. At the same time the market has not suffered to any apparent degree because of these factors. If anything, they are making for a stronger price situation, and quotations on all kinds of paper exhibit pronounced firmness with an inclination to rise.

The Federal Trade Commission's report shows that there was a slight decline in production of print paper in the United States in December compared with November, the drop doubtless being due to the holidays in the final month of 1922. Domestic mills — 73 mills reporting to the Commission — produced 119,494 net tons of total newsprint in December, which compares with an output of 127,983 net tons in the preceding month, 107,877 tons in December, 1921; 124,857 tons in December, 1920; 122,781 tons in December, 1919, and 100,935 tons in December, 1918. Of the total of 119,404 net tons of total newsprint produced in December last, 110,803 net tons were standard news, contrasted with a production of 117,439 net tons in November last, 100,834 tons in December a year ago, 111,038 tons in December, 1920; 104,262 tons in December, 1919, and 87,797 tons in December, 1918. Based on reports covering the past five years, December production of total newsprint was approximately 9 per cent above the average monthly output, and of standard news was 11 per cent above an average.

Mill stocks of print paper continued to decline during December. At the beginning of that month domestic mills held 19,651 net tons of total newsprint and at the end of December they had on hand 19,208 net tons, while stocks of standard news declined from 15,370 net tons at the outset of December to 15,128 net tons at the close of that month.

Total production of newsprint in the United States during the year 1922 was 1,447,688 net tons, which established a record of output with the single exception of 1920, when 1,511,968 net tons were produced. Last year's output compares with 1,225,235 net tons in 1921, 1,374,517 tons in 1919, and 1,260,285 net tons in 1918. Production of standard news in 1922 reached a total of 1,342,307 net tons, contrasted with 1,129,297 net tons in 1921, 1,380,239 net tons in 1920, 1,227,180 net tons in 1919, and 1,125,086 net tons in 1918.

A feature of the market this week has been the strength displayed by box board. Prices of board have advanced to new high levels for the present movement. Mills in the East are quoting plain chip at $70 to $75 a ton f.o.b. New York, with most manufacturers now demanding the higher figure, and news board

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

has sold up to $82.50 a ton New York. Strength in board is due largely to the situation in raw material though demand for this commodity also has an important bearing on the market. It is reported that board mills are heavily booked with orders, and that they are falling behind in deliveries because of not being able to secure all the raw material in the form of waste paper that they require. There is no doubt that supplies of old paper and particularly those grades chiefly consumed by board manufacturers are not up to normal; moreover consumption is running very high as board makers are experiencing an active demand for their product. Paper box manufacturers are exceptionally busy and are using large quantities of board of all kinds, especially is this so as regards those kinds of board used for making fibre shipping containers and folding boxes. The use of paper boxes for packing numerous articles has been increasing at a rapid rate for some time, and this is now reflected to a very pronounced extent in the board market.

Nothing new has developed in the newsprint situation. Supplies of print paper are moving into consuming channels in steady fashion, and publishers are using exceptionally large tonnage. Prices are firm, and buyers depending on transient purchases to fill their needs frequently find it imperative to grant premiums to get newsprint. Book papers are quotably firm and are in good demand. In fact, the call for book paper is slowly though consistently expanding day by day, and manufacutrers are not hesitating to name higher prices in some cases though they are endeavoring to keep prices on a stabilized level. Fine papers are firm and in steady demand. Mills in the Holyoke district are running at close to capacity and are shipping out their product as quickly as it is available.

Coarse papers are enjoying an active market, particularly kraft wrapping paper and tissue napkins, towels and toilet papers. No. 1 domestic kraft wrapping is quoted at about 7 cents a pound f.o.b. New York.

GROUND WOOD — Mechanical pulp is meeting with a ready sale and at firm prices. The trend of quotations is upward. Domestic producers are freely securing $45 to $47 a ton f.o.b. grinding plants for spruce ground wood for prompt shipment, and reports have told of sales at higher prices in some instances. Manufacturers haven't a whole lot of ground wood to offer in the open market. Most of them are prevented from increasing their output because of frozen mill streams, and, having contract commitments to provide for, and seeking to keep some reserve supply on hand for their own use, are directing only comparatively small lots to spot buyers. The result is that high prices prevail in the open market and consumers are having no easy time covering their wants. Demand is general and very healthy in character, coming from various newsprint, board and other consuming plants.

CHEMICAL PULP — News by cable that efforts to arbitrate the strike of pulp mill workers in Sweden have failed and that the strike has spread to a point where three-quarters of all the mill operatives have joined the strike, and that the mill owners have threatened to declare a lockout on January 29, has served to materially strengthen the tone of the chemical pulp market in New York, especially as regards foreign pulp. Importers here are mostly asking 2.90 [illegible] and quotations on No. 1 foreign unbleached sulphite have been advanced to where most of the supply available is held at 3 cents or higher ex dock or warehouse. Domestic pulps are firm, having also been influenced to some extent by the situation that has developed abroad. Demand is regarded as good, and it is quite noticeable that paper manufacturers have displayed greater interest in offerings during the past few days.

RAGS — The market for papermaking rags is firm. Demand for roofing stock has simmered down somewhat this week but this has not affected prices, dealers here continuing to ask the same prices as before and showing no disposition to sell for less. No. 1 roofing rags are quoted at around 1.45 cents per pound f.o.b. New York, and No. 2 packing at an average of 1.35 cents. Foreign dark cottons are bringing about 1.35 cents a pound ex dock New York. All grades of new cuttings are firmly quoted and there is a fairly steady movement into paper mill channels. No. 1 white shirt cuttings are held by most packers at 12.50 cents a pound New York, No. 1 washables at 4.75 cents, and new blue overall cuttings at 7 cents. Old white rags are firming and most dealers ask at least 6.50 cents a pound at shipping points for No. 1 repacked whites, and around 5.50 cents for No. 1 miscellaneous packing of whites. Thirds and blues are quoted at about 2.25 cents for repacked and 1.75 cents for rough packing.

PAPER STOCK — Probably the feature in waste paper this week in the New York market has been a slight easing off of prices of No. 1 mixed paper. This has been due apparently to board manufacturers having held back in buying this grade of paper waste, not because they are not in need of supplies but evidently in an effort to check the upward rush of prices. No. 1 mixed paper is at present selling at around 1.30 cents per pound f.o.b. New York, with some purchases by board mills reported down to 1.25 cents. Folded newspapers rule firm at 1.60 cents New York and are meeting with a brisk demand, while old magazines are wanted in good amounts with consumers paying around 2.65 cents at shipping points for heavy flat stock. No change is noted in white shavings. No. 1 hard white shavings are bringing 4.25 cents upwards New York, and No. 1 soft white about 3.75 cents per pound. Old kraft paper is steady at 2.40 cents, and print manilas are qnoted at 1.75 cents at shipping points.

OLD ROPE AND BAGGING — Prices of old manila rope are still stiffening, and reports have it that sales of domestic rope to paper mills have been made at higher than 6.25 cents a pound at dealers' shipping points. At any rate, sellers are demanding at least 6.25 cents, and even foreign manila rope is quoted at 6 to 6.12½ cents on the dock. Old bagging is quotably steady but marked by no unusual demand from consuming quarters. No. 1 scrap bagging is quoted by New York dealers at 1.10 cents a pound f.o.b. this city, roofing bagging at 90 cents a hundred pounds, and No. 1 gunny bagging at around 1.25 cents.

INCREASE OUTPUT OF HARMSWORTH MILLS

An agreement which will increase the output of the paper mills of the Anglo-Newfoundland Development Company at Grand Falls, Newfoundland, by one hundred tons per day, has been arrived at between Lorth Rothermere, representing the corporation, and Sir Richard Squires, representing the arrangement of Newfoundland. Premier Squires in announcing the arrangement here tonight, said that no concessions are involved and that the deal is a straight business proposition. —Exchange.

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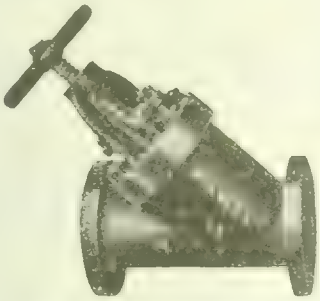

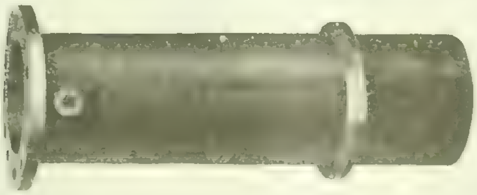

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BRITISH TRADE NEWS

(From Our London Correspondent)

London, Jan. 16., 1923

I have just received a report which the Secretary of the Amalgamated Society of Papermakers—a trade union made up of mill workers—presented at the 115th quarterly meeting three days ago. Mr. Fowler takes an optimistic view of the paper industry and says there appears to be a slow but steady improvement in things, although there are some mills which are not yet producing 50 per cent of their normal output. The newsprint section, he points out, continues to be busy, and good reports are to hand from the printing and asparto mills. The fine mills, however, seem to be in the worst position at present, a fact which is attributed to a greater use of cheaper classes of paper. Mr. Fowler notes with pleasure the increase in the exports and if this increase continues he predicts more employment for the workers.

Mr. Fowler strikes one note in the report which will give Canadians an insight into the keeness there is, even amongst the workers, in the matter of Technical Education. He states that representatives of his Society, along with others on the Joint Industrial Council, are doing everything in their power to improve facilities for technical education, so that every person who desires may be given a chance to improve his knowledge of the trade. It was very gratifying to note the success obtained by some members of the Society in the examination recently held by the city of London and Guilds classes in papermaking and he sincerely hopes that more members will avail themselves of the opportunity now offered them.

Dealing with Safety First, Mr. Fowler thinks that machinery in some of the mills might be fenced better and a development of the knowledge, by the workers, of the safest way to approach their work. Youths should be instructed on the sources of danger when entering the mills.

The report is an excellent one for a trade union and full of good advice.

Mill Developments

Edward Lloyd, Ltd., are starting the erection of a new paper mill at Kemsley Downs, close to the Ridham Dock, Sittingbowne.

It is understood that this new mill will contain two of the largest papermaking machines in the Kingdom. One will be run at 800 feet per minute, turning out a finished product of 215 inches. It is expected the second machine will be the same size, with reserve to run up to 1,000 feet. The two will produce 800 tons of paper per week.

In common with other newsprint mills, Messrs. Lloyd's "news" section is working full capacity. They have plenty of orders on hand.

When preparing plans for the new mill special provision was made for extensions in the future, if they are necessary. Messrs. Lloyd are one of our go-ahead firms and their future developments should be studied with great interest.

Papermaking & Church Work

"Practical Papermaking" was the title of a lecture given by Mr. W. M. Thom, a London Paper merchant, the other night to the Literary Society of Streaham, Congregational Church. He had a big audience and it was the most interesting lecture I have listened to for some time, particularly when it is stated that the audience could not beforehand practically tell if paper was made from rags or pulp. But before Mr. Thom had finished he had everybody, with the aid of a good limelight lantern and specimens, well versed not only with pulps and chemicals, but even the dandy roll. Specimens of paper were on view—not for testing purposes, of course.

This is a novel form adopted of entertaining church goers in the evenings and it is the first time I have heard of pulps and dandy rolls being inside the presincts of a church. We have had lectures on papermaking in other institutions—but not for the benefit of church goers. Have Canadians beaten this record?

Pulp Mills Stopped

As I write everybody is talking in London in pulp and paper circles of the troubles that have broken out in Sweden amongst the pulp producers. It originated in the forests over wages and developed in the mills, with the result that 21 mills are at present reported to be shut down.

The trouble may develop further as the pulp workers are trying to call out the paper mill workers. Another two weeks will decide.

Sweden has been most unfortunate recently in their disputes. They have hampered trade considerably.

Year's Pulp Imports

Preliminary figures have been issued concerning the year's imports of wood pulp. They were as follows, compared with 1921:—

1922	925,614 tons
1921	690,758 tons

In 1913 pulp imports were 977,957 tons and in 1921, 925,590 tons. It will be seen we are gradually creeping back to pre-war figures.

Next week full particulars of the imports will be ready for publication. The paper exports from British mills are given as follows:—

1922	2,455,060 cwts.
1921	1,463,420 cwts.

I attribute the rise in the paper and cardboard exports due to the Australian buying since British mills were given a preference tariff.

The Travellers — They're Off

Ships are going down to the seas and in them are some of the pick of British paper travellers. They are off to all parts of the world, Australia, New Zealand, South Africa, Canada and America, etc., on business trips and to capture any contracts that may fly in their way. There are the usual "bon voyage" dinners and luncheons in progress and "mine host" is wished God-speed as the "Loving Cup" is sent round.

Mr. Baker, of the Empire Paper Mills, who has just returned home from Canada and U. S. A. speaks highly of Dominion mills and some of the novel innovations he observed in his travels have taken his fancy. Mr. Baker who has passed through the chair of the Technical Section of the Papermakers Association says of Canada: "The finest mill owners I have met; their hospitality great."

The Markets

The pulp market shows a little more livliness after the holiday and prices all round are firm.

One feature of the pulp shipments reaching the United Kingdom in December was the increased supplies from Canada.

The paper market is fairly brisk and new contracts are being fixed up for 1923. This is usually the month for concluding negotiations on contracts.

OWEN SOUND'S ONE PAPER

Owen Sound will have only one newspaper after February. It was announced that the Advertiser, which for sixty years has served this district, has been purchased by the Fleming Publishing Company, Limited, publishers of the Daily Sun-Times, and will be amalgamated with that paper.

It makes a vast difference to you whether you manage yourself, or whether yourself manages you.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI GARDENVALE, Que., February 8, 1923 No. 6

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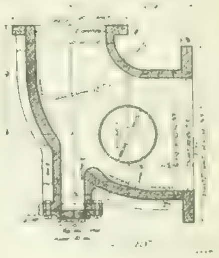

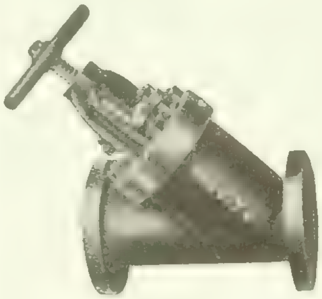

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EDITORIAL

DON'T KILL IT

It is always a shock to read or hear of a babe dying of exposure. The winters are cold in Canada, but most Canadians are warm blooded and warm hearted, though on occasion a bit hot-headed. Now, while it may be not exactly appropriate to refer to the following matter as a "babe", yet it certainly is a child of the brain powers of the Woodlands Section of the Canadian Pulp & Paper Association.

We refer to the proposition presented at the annual meeting of the Canadian Pulp & Paper Association to provide for the appointment and maintenance of a forest engineer and advisor to the members of the association. The way the proposition was turned down at the meeting came as such a shock that most of the proponents of the idea were struck dumb with astonishment. They are beginning, however, to recover their powers of speech. We certainly hope that the result will be an immediate reconsideration of the proposition by the incoming executive, and that a qualified forest engineer will be installed in the association's office as soon as possible.

When the resolution for the appointment of such a forester was made at the meeting, the case seemed so entirely clear and the necessity so urgent that an elaborate argument was not presented. Unfortunately, for the forestry program, the proposition for the establishment of a director of research with budget calling for $30,000 had been introduced first, and after long discussion, that matter was decide by being laid over until the next annual meeting. The discussion seemed less of an argument against the proposition, than it was an apparent refusal to consider the matter at all. In view of this stone wall opposition, the feelings of those who would like have seen the proposition adopted, were well expressed by the motion which put the poor thing out of misery, and which was worded as follows:

"I move that the association continue its penny wise and found foolish policy."

We have said that it was unfortunate that the proposition for a research director should have been considered first. It was more unfortunate that any one at the meeting should have considered it at all necessary to discuss the two subjects on the same basis, or even to link them in the same program. The mover of the resolution spoke truly when he said, "Research work in the mills can wait, but research work, such as we contemplate in the woods cannot wait. This bud worm killed timber is standing by thousands of cords and we have either to cut it or leave it. If we do not salvage it within a year or two, there is going to be an enormous loss. It is a pressing question." It seems to us that there is as much difference between the research proposition, important as that is, and the forestry proposition as there is in the case of a man who is about to build a house and sits down to decide, on the one hand, whether he will employ a housekeeper, and on the other, whether he will employ an architect. We doubt very much if there is a mill in Canada which, if there were a tract of budworm killed timber adjoining the mill property that would not gladly pay a man $3.00 a day to trim it up and bring it to the mill, and even provide him the best advice of their chief forester and woods superintendent. We say no mill in Canada would hesitate a minute to do so, yet the expense so involved would go a long way towards paying, if it did not more than cover, an assessment that would provide for the program proposed by the Woodlands Section.

Objection was raised to the proposition on the part of those who make paper and do not own or use timber limits. Now, while their business depends ultimately upon having a supply of woodpulp and requires the perpetuation of the forests, yet there may be some justification in the their claim that they should not be assessed on the same basis for the maintenance of a forestry expert as mills immediately using the wood from the forest. The president of the Association suggested that in such a case, if the objection were supported, the proposition would become a matter for several of the Sections to take up and consider. There seems no logical reason why they should not do so, and we would suggest that there be a joint meeting of the Mechanical Pulp, Sulphite Pulp and Sulphate Pulp Sections as soon as convenient, and they assess themselves, or ask the executive to do so, on such a basis as will provide for the budget asked by the Woodlands Section. It is not only a criminal waste, but it is downright foolishness on the part of an industry to see thousands of dollars worth of its raw material going to waste through lack of knowledge as to whether or not it can be salvaged or as to how much of it can be salvaged, and how it should be done. From the remarks of Dr. John S. Bates of the Bathurst Company, in addressing the Woodlands Section, there seems no doubt but that the pulp mills have been a little bit too wary of disease or dead wood, and that much of that which has been allowed to go to waste could have been used to advantage. In the present case, we have not only to consider the actual loss of the wood that is now dead and dying, but the danger through the spread of insect and disease to standing timber, if all that is now threatened is allowed to fall and decay in the woods.

There are many other problems that a forest engineer could undertake for the Association, the results of which, we are sure, would repay many times over the outlay for the maintenance of such a department. It seems foolish to consider the ultimate refinement of process and practise in the mills, when so little attention is being paid to the raw material that the mills require. We fail entirely to reconcile the extreme care and thought which is given to mill operation with the thoughtless disregard which many mill managements show in connection with provision for their woods supply, and the care of their limits. Both should be done. The establishment of a forest engineer at the office of the Association is not only a step in the right direction, but is undoubtedly the cheapest way for the Association members to get adequate, accurate and prompt information on the problems that they must face. Let the Association keep the research problem well in mind, but let the executive undertake this forestry work at once.

COBWEBS

It is apparent from letters received from various parts of the United States and Canada that at least a goodly number of those who attended Paper Week in Montreal, have entirely recovered.

Advice from Scandinavia informs us that the Swedish Cellulose Association has been disolved. This is very much to be regretted, as we feel that the maintenance of healthy association work in similar lines of industries in the various countries of the world is a step in the direction of permanent international peace and harmony, since community of endeavor and sensated action of information is sure to bring people of the various countries closely together. The Pulp & Paper Industry in Canada had already established the most cordial relations with its Scandinavian friends, and it is to be hoped that this contact can be maintained without interruptions.

THE CHEMICAL ENGINEERING CATALOG: SEVENTH EDITION

There are few experiences more interesting than to watch the development of an idea. Seven years ago, our friend Mr. F. W. Robinson and his colleagues, conceived the idea of a composite catalog of materials used in chemical engineering industries, which at the same time, would be an index of equipment and material. Besides the convenience of being able to find in the same book not only what might be called a map of materials, but also a description of the different products of their makers or dealers, there is also the advantage of having the matter strictly up-to-date and in having the ground thoroughly covered. A comparison of the present issue with earlier ones shows many long steps in advance in the construction of apparatus and the application of mechanical devices to chemical engineering industries. Just opening the book at random, we find on page 677 an illustration of such a development. Here is given a short paragraph describing the use of the continuous filter to the washing of wood pulp. Many other applications of the usefulness of this book to persons engaged in the pulp and paper industry could be similarly cited. For example, we turn over a few more pages and on page 874 we find a paragraph calling attention to the use of electrical equipment in the manufacture of bleach liquor and to the use of electrical drives for paper machines; and so it goes through the whole book, which contains about 1200 pages.

The arrangement of the material is such that both the listing of firms and the listing of products is self indexing, which, of course, makes the information very easily available.

A valuable feature of the book is a list of technical and scientific books.

This publication is not ordinarily sold but is leased at $2.00 per copy for a period of one year to chemical engineers, works managers, superintendents, consulting engineers, works technical and chemical departments, etc. For persons who do not come within the classifications set forth by the publishers, a charge of $10.00 per volume is made. The rental fee carries with it the obligation to return any issue when a new publication is ready for distribution. Inquiries and orders should be addressed to the Chemical Catalog Co., 19 East 24th Street, New York.

ATTENDANCE AT CHURCH

The men who need public and social worship will never, as a rule, seek it unless the men who think they do not need it set the example and join in it. There is, in my judgment, no more commanding public duty than attendance at church on Sunday. The greater the man's influence, the more sufficient he may be to himself, the greater and more imperative the duty. I do not believe there ever was a man who attended church constantly through life, or who brought his children to church in their youth, or who was taken by his parents to church in his own youth, who ever regretted it as he looked back.

Senator George F. Hoar.

Some Features of the Pulp and Paper Convention

Little Things That Make The Montreal Meetings Famous

Never before, in the history of the Canadian Pulp and Paper Association, has the convention week been marked by so many enjoyable features as the affair in 1923. By a happy coincidence and through care in arrangement, there occurred during the last week in January, not only the Pulp and Paper meeting, but the annual gatherings of a number of Associations whose work is related to that of Pulp and Paper manufacture. The most important of these were the meetings of the Canadian Forestry Association, the Canadian Lumberman's Association, the Quebec Forest Protective Association, the Canadian Society of Forest Engineers and finally the annual meeting of the Canadian Pulp and Paper Association with those of the related sections, the most interesting of which, as far as public interest is concerned were the meetings of the Woodlands Section and the Technical Section.

MR. ANGUS MCLEAN,
President Canadian Lumbermen's Association

Apart from the business meetings there were a number of very delightful social functions. The Lumbermen held a Ball at the new Mount Royal Hotel early in the week. On Wednesday noon Mr. F. J. D. Barnjum, who has attained an international reputation as a Forest Conservationist, tendered a complimentary luncheon to the Canadian Society of Forest Engineers, and others interested in forestry problems, at the Mount Royal. The interesting address which he delivered at the close of the function is printed elsewhere in this issue. During the course of the luncheon several very pleasing musical selections were rendered, and Mr. Barnjum's promise to make the affair an annual event was received with enthusiasm.

In Honor of George Carruthers

There is some question in our minds as to whether it would be more nearly correct to say that Mr. Carruthers was honored with a dinner, or whether the rest of us were honored by having him with us. It may be stated, however, that on Wednesday evening January 24th, the members of the joint executive committee on the textbooks, together with the committee on education for the Technical Section and members of the educational committee, of the Technical Association of the Pulp and Paper Industry tendered a dinner to Mr. George Carruthers in appreciation of his untiring and self-sacrificing efforts in the cause of vocational education for persons engaged in the Pulp and Paper Industry. The dinner was given at the Mount Royal Hotel, in Montreal, and there were seated at the table Mr. George Carruthers, president of the Interlake Tissue Mills, and chairman of the Joint International committee on textbooks; Mr. R. S. Kellogg of New York, secretary of the committee and secretary of the Newsprint Service Bureau; Mr. George Williamson, production engineer for the Strathmore Paper Company and president of the Technical Association of the Pulp and Paper Industry; Mr. Edward Beck, secretary of the Canadian Pulp and Paper Association; Mr. T. L. Crossley, member of the Joint International committee and chairman of the Technical Section committee on education, with the following members of his committee: Mr. C. Nelson Gain, superintendent of the Don Valley Paper Company; Mr. A. P. Costigane, engineer and secretary treasurer of the Ontario Pulp and Paper Makers' Safety Association and Mr. J. N. Stephenson, editor of the Pulp and Paper Magazine and editor of the textbooks under the supervision of the committee; also Mr. O. F. Bryant, chairman of the Technical Section of the Canadian Pulp and Paper Association, Mr. A. L. Dawe, former secretary of the Association, Mr. J. J. Clark, vice-principal of the Institute of Industrial and Domestic Arts and associate editor of the textbooks and Mr. W. G. Mitchel, assistant to the president of Price Brothers & Company.

Mr. Crossley acted as Toastmaster, and conducted the affair in a most enjoyable manner. A number of impromptu toasts that had been provided for beforehand, were proposed and honored, and the speeches that accompanied them were a lively mixture of seriousness and humor. Several songs had been composed for the occasion, but as no music could be found to fit the words, and the one attempt to sing one of them without music resulted in absolute though amusing failure, vocal efforts along that line were abandoned. Place cards which told in verse the virtues or otherwise of the various guests were found on the table. The one at Mr. Carruther's place was a quotation from Oliver Wendell Holmes which reads as follows:

"You hear the boy laugh?—you think he's all fun;
But the angels laugh, too, at the good he has done;
The children laugh loud as they troop to his call,
And the poor man that knows him laughs loudest of all!"

The menu's bore on the front a reproduction of a snap shot of Mr. Carruthers, that was taken at Iroquois Falls, Ontario, last summer on the occasion of the summer excursion of the Technical Section. The items on the menu were terms more familiar to Pulp and Paper men than characteristic and descriptive of the articles of food. For instance the guests were asked to drink "Fortified Liquor and Chrysoidine" and to eat "Slash, Digester Filling, Wet Broke, Foam Killer, Bleached Sulphite Laps, Animal size and Mixed Screenings", and to smoke "Dryed Barker Waste"; this difficult task was fairly well accomplished, when Mr. Crossley passed the toasts. The various short speeches all reflected the helpfulness and inspiration of Mr. Carruthers' contact with practically everybody connected with the Industry either directly or indirectly. It was also brought up by one of the speakers what a vast amount of valuable philanthropic work was done in an exceedingly quiet way by the guests of the evening. Many of us were entirely unaware of the breadth of his interest and the extent of his benefactions.

MR. GEORGE CARRUTHERS,
Chairman, Joint Executive Committee on Education

The toastmaster, then read regrets from Mr. Fred Clark, Mr. R. S. Hatch, and the following:

Per Service A. Conan Doyle and Oliver Lodge.
Harpswell City,
Rings of Saturn.

Carruthers Dinner Committee.

Gentlemen: — I regret that astral conditions prevent my corporal participation in your doing of honours to my old friend and fellow-member of the infant class, George Carruthers; my disenbodied muse has just nudged me to put my thoughts into Habitant language thus:—

Bateese mon vieux, I'm goin tole you
About wan fren' of mine,
She's name its George Carrutters,
Bagosh she's something fine.

She's mebbe tole some leetle yarn
Dats mak you laugh for sure
But dats not all de whole beesness,
Dere's oder tings encore.

You go some day de offis,
For talk it some beesnes
An see de many kin' of folk
Was kip George from his res'

Big man dats got him whiskers
Was stick him out he's chin,
Some womans wid de spectacle
Come out wen he go in.

It's kip the girl outside de door
Feel pretty scare all day.
De boss is got no monee lef'
He's give so much away.

Smart guy dat sell machinery
He say she's easy mark
Don't tak' heem long for fin' his wrong,
Don't stay long in de dark.

Its tak some very early bird
For catch him tak' de nap
Dat's many time he spill de beans
On dose smart Aleck chap.

But dat man George, you treat him square
An dat's jus' comme il faut
You'll fin' dat hee's de mos' bes' man
Was live in Toronto.

Yours very sincerely,
W. H. DRUMMOND.

The value of a decision of the committee that each volume should have its pages numbered consecutively, independent of the others, was born out by the presentation to Mr. Carruthers of Volume VI, which was completed before the appearance of Volumes IV and V, by the special efforts of some friends of the committee in Montreal. This volume has to do with a subject of the greatest importance to the industry as was indicated by the title on the back that reads "The Treatment of Waste Liquor." The volume is made up and bound in all respects similar to Volumes I, II and III which are now available, and on the fly leaf were inscribed the names of the guests at the dinner, and on the title page was a suitable inscription dedicating the book to Mr. George Carruthers and explaining the purpose of its contents. On looking further into its pages, it was found that a large number of the pages had become stuck together, and a peculiar kind of cut was used in the book which removed the centre of the volume, and in this recess was found a felt bag containing a small flask. It is understood that the flask contained a sample of waste liquor from some plant in Quebec, but the writer lacks absolute proof of this rumor.

As has been said, there were several songs written especially for the occasion, but the editor refrains from reproducing them for fear of damaging the reputation of the Pulp and Paper Magazine. Copies, however, will be furnished on special request while they last. Taken altogether, this dinner was one of the most enjoyable events of Paper Week. It should be said that Mr. Carruthers did his best to disclaim credit for much of the success of the various efforts that were ascribed to him, but he failed entirely to convince the gathering that he was not the mainspring of the important educational work which is now being carried on by the Pulp and Paper Industry in Canada and the United States.

Another Educational Dinner

It would seem that persons attending the Pulp and Paper Convention go to Montreal to "eat" and "talk," or perchance to "listen". In any case the great event of the year certainly does afford opportunity along both of these lines, and in a number of cases, the two can be very happily combined. Such was the case on Thursday night, January 25th, when there was a lull in the proceedings between the adjournment of the Technical Section meeting Thursday afternoon, and the beginning of the Smoker that same evening.

Advantage was taken of the situation by Mr. J. J. Harpell, president of the Institute of Industrial and Domestic Arts for arranging an informal dinner for those interested in the vocational education work in the industry, and there were about 40 present. At the close of the dinner, Mr. Harpell read a paper outlining the evolution of education, with a special reference to the development of industrial education and finally, leading up to the working out of the Foster system of education by correspondence, which has been found most satisfactory of all for the man who cannot afford or should not be induced to leave his job, and yet who has ambition to study his work. Mr. Harpell stated that the Pulp and Paper Industry had gone further than any other in the preparation of textbooks and in the encouragement of the personnel of the industry to educate themselves along the lines of their daily work.

MR. J. J. HARPELL
President, Institute of Industrial & Domestic Arts

At the close of Mr. Harpell's talk, remarks were made my Mr. H. F. E. Kent, president of the Canadian Pulp and Paper Association, by Mr. F. J. Campbell, chairman of the Association's committee, supervising the work of the Institute in the Pulp and Paper Industry, Mr. George Carruthers, chairman of the Joint International committee on textbooks, by Professor H. O. Keay of the Laurentide Company, by Mr. Harris of the International Paper Company, Mr. Kernan of the Donnacona Paper Company, Mr. G. C. Piche, chief Forester for the province of Quebec, and by Mr. Mason, operating manager of the Laurentide Company. The speakers all seemed agreed that any industry is sure to benefit by encouraging the education of its personnel, and the Institute of Industrial and Domestic Arts was commended for its initiative in perfecting the organization and making available, for any person in the Pulp and Paper industry who can read and write, the opportunity to study the principles and processes involved in his daily work, and Institute was complimented upon the success which has crowned the brief four months of efforts since the courses were established. It was pointed out that the mills are acting only in their own interests when they render every assistance to the representatives of the Institute in the introduction of these courses, and in the assistance of their employees in taking advantage of the opportunity offered for preparing themselves for advancement an positions of responsibility.

At the Convention, Messrs. P. B. Wilson, Geo. Chahoon, Jr., Carl Riordon, Sir Edmund Walker, H. F. E. Kent, Geo. Carruthers, J. A. Bothwell

The discussion of this interesting subject had just nicely got underway when several hooded members of the K. K. K. appeared from the lower regions and announced that as several members of the party were to be accused of serious offences, they should appear at once in the Grill Room below. Amid laughter and cheers the dinner party then adjourned to the Smoker of the Technical Section.

SWEDISH PULP MILL STRIKE SPREADING

The following cablegram telling of the spread of the Swedish pulp industry strike was received by the American Paper and Pulp Association:

"Arbitration meetings accomplished nothing. Eleven thousand men, equaling two thirds workmen pulp industry now striking. Unless arbitration successful employers of whole industry will declare lockout twenty-ninth."

A cable last week said that one quarter of the industry, involving about 5,000 men, was then on strike for a 20 per cent. increase in wages. At that time only the larger mills were affected, but the spread of the strike has now involved many of the smaller mills.

When Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association was in Scandinavia last summer investigating the European paper and pulp industry for the American mills, the Swedish mills had an agreement with the employees including every mill in Sweden. This agreement was at that time expected to be renewed on its expiration, December 31.

THE MILL CAN BE MADE SAFE, ABSOLUTELY SAFE IN 1923, IF—

The superintendents will do THEIR part;
The foremen will do THEIR part;
The men will do THEIR part.

Safety is not a matter of rules. Notices can be posted till there is no room on the walls for another square inch.

Rules can be drawn up and put on the bulletin boards.

Machines can be guarded by all manner of safety devices.

And yet accidents will happen.

Why?

Because there is only one thing which will prevent accidents—that every man from superintendent to apprentice thinks of safety as part of his work. It is the mental attitude and not the mechanical guard which prevents loss of life and limb, and the loss of time in less serious injuries.

What can the superintendent do?

The attitude of the superintendent is extremely important.

If he sneers at safety, or is merely negligent of it, his attitude soon affects his foremen, then the men, and the monthly figures show the result.

If on the other hand he gives thought to safety, talks to the foremen and men about it, suggests some things, asks for suggestions on others, he can have every man thinking of safety and acting safely. The monthly figures will soon prove it.

There is not doubt about it, the attitude of the superintendent determines how red the month's record will be.

What can the foreman do?

Because of his close connection with the whole army of workers, the foreman is the most important link in the chain of safety. If his superintendent neglects safety he will soon fall into the same habit. The men will take their cue from him and splashes of red will be the certain result.

If his superintendent is actively for safety he has the chance to push it forward among his men.

The power of suggestion is his greatest lever. Bawling aman out may be necessary sometimes, but it generally incites resentment, instead of planting a seed of safety.

In a shop in Montreal a foreman who had a big gang under him made a practice as he went about his work of picking up a tool here, a piece of material there and laying it aside with a quiet remark to the man that "a fellow might trip and break a leg on that." No bawling, no preaching, simply example. The result was in a few months that shop was almost free of accidents.

The whole thing is, the ordinary man is inclined to be thoughtless about things he thinks do not matter. He is afraid to be thought scared if he does things in the safe way. But he is responsive to influence and suggestion.

All he needs is a lead. If the superintendent and foreman give him the right lead, the shop is safe.

Reporting Accidents and Hazards

A very important part of the work of superintendents and foremen is reporting of accidents and hazards.

They can by a little encouragement get every man under them to call to their attention little things round the mill which may lead to a bad accident. If these are reported to the safety department they will be promptly fixed.

The prompt reporting of accidents is very important. The idea in getting all the details of an accident is not to find a goat, but to find out the real cause of the accident and see if some thing cannot be done which would prevent another such accident happening

What can the men do?

The men are the ones most interested. It is they who lose fingers, and time and money. Yet it is generally the men who think least of safety. The superintendent and foremen can have a very great influence, but a man cannot very well blame them if he gets a finger cut off through his own carelessness.

The men in the plant can cut out over 50 per cent. of the accidents if they put their mind to it. Most of the experienced workmen are safe in their habits of work. But are they doing all they can to help others? Do they warn a younger man who is taking dangerous chances. Do they call another man's attention to the dangerous way he is handling a machine? Or are they in effect saying: "I am not my brother's keeper."

Begin the New Year Aright

At the threshhold of a new year let us all resolve to devote ourselves to safety—not safety for ourselves alone but for all our fellow workers. If we all get the right mental attitude towards safety, the green pegs on the board will tell the result.

(And what the Broke Hustler says of the Abitibi plant is true of every other mill.—Ed.)

6 TONS WASTE PAPER EQUALS 1 ACRE FOREST

Kalamazoo, Mich., Feb. 3—A cooperative movement of business men of Kalamazoo to conserve waste paper at home for the use of the mill of the Kalamazoo valley is being organized by business men of the city, in cooperation with the paper manufacturers, led by Felix Pagenstecher of the Bryant Paper Company. The movement will be extended to the public schools, with the school buildings as centers for collection and the children as collectors. The collection campaign will be so organized as to teach the school children the value of conservation, and at the same time provide market for the waste paper of the city. Boy Scouts, churches and charitable organizations will also be enlisted in the campaign.

That the Kalamazoo valley alone uses on a conservative estimate 600 tons of waste paper every working day of the year, or 180,008 tons in a year of 300 days is pointed out by Mr. Pagenstecher.

"The failure to collect waste paper in Kalamazoo alone means a serious loss to the community," said Mr. Pagenstecher, "but also raises another vital point, the perpetuation of our forests. Every *six* tons of waste paper collected means the preservation of about *one acre* of pulp wood forest. We are now preparing a direct appeal to the community to educate the children to the value of relying on their own efforts in the securing for their schools and clubs those things that will add to their joy of living.

"Through the central association of the paper industry we are endeavoring to have the Kalamazoo waste paper conservation movement made national in scope."

WOULD DO IT HERSELF

Lady (in broker's office) — I wish to buy ten shares of Steel.

Broker — At the market, madam?

Lady — Oh, if you can buy them at the market, never mind. I'm going right down there. — Boston Transcript.

From Tenderfoot to Forest Prophet

By FRANK J. D. BARNJUM

The following address by Mr. Barnjum was made at the Luncheon tendered by him to the Canadian Society of Forest Engineers, Visiting Foresters, Entomologists and other invited guests, at the Mount Royal Hotel, Montreal, on January 24th., 1923, Covers were laid for eighty-five.

I want to preface my address with the single statement that while the word "I" may be used frequently and some references of a personal nature may be made, this is not done with the slightest egotism, but as a very humble citizen of this great country and entirely with the hope that some of my experiences and mistakes may be of benefit to you and, through you, to our country, and with the idea of trying, in some small measure, to repair, or make good at least, a small portion of the devastation that has been wrought by me during the course of a long life devoted to the cutting of trees.

When a man gives his entire life to one subject, and does not learn something that is of value to hand down to the coming generation, he must be a very poor specimen of humanity indeed.

There is just one other thought that I want to impress upon you, and that is that regardless of how much energy and time I have put into my conservation campaign, I have probably less interest, from a purely personal standpoint, in the results of my work than any one here present, as in my case a life of devotion to hard work with a fair amount of judgment has been more than amply rewarded from a commercial standpoint, so that I have nothing at stake except that at my age, a man realizes as never before that success in life is not measured by dollars alone, and the greatest satisfaction of all is the thought that one may have done something for the benefit of mankind.

If you will just bear these thoughts in mind, I know you will pardon any personal references that I may make.

It is very pleasing for me to see such a large and important gathering assembled here to-day, and in tendering a hearty welcome to you foresters, entomologists and representatives of the press I want to say to you in all earnestness that Canada's future rests upon your shoulders, for without forests human life cannot exist. I include the press in this broad statement also, as without its earnest support we can accomplish very little. The road to success in any line of business or endeavor is advertising, honesty, hard work and advertising. The moment you stop advertising, your business or your cause is dead. I cannot emphasize this fact too strongly, and I want to tender my sincere and grateful thanks to the splendid press of Canada for its uniform support of the cause of forestry. In my entire campaign for the conservation of "Canada's forests for Canadian industries" during the year that has passed, I have not come in contact with a single adverse criticism by any newspaper in the Dominion, and I think this is a degree of support that has never been accorded to any other reform measure in this or any other country. This indicates not only the soundness and justice of the cause, as well as its popularity, but away and beyond this, and more important from a national standpoint, it indicates a uniformity of judgment, absolute independence, honesty and singleness of purpose, and unselfish devotion to the country's welfare on the part of its newspapers that is unparalleled in the history of the world.

The greatest safeguard any country can have is a sane, fearless and independent press, and in this respect Canada excels all other countries. My appreciation, both personal and as a citizen of this great country, cannot be measured in words. Appreciation of one's efforts is the highest reward perhaps that can be achieved in this world, and if you gentlemen of the press obtain one-half the satisfaction that I have derived from the hundreds of appreciative notices of my humble efforts on behalf of our forests, it is the very best wish for happiness that I can offer to you. And I want you foresters and entomologists to realize to the fullest extent that before you can hope to achieve the reforms in forestry that we all have at heart, especially through Governmental action, we must have the power of public opinion behind us, and the only way you will get prompt action — and immediate and drastic action is absolutely necessary — is through an aroused public. This can only be accomplished through the press, and not by minimizing our situation, but by painting the facts exactly as they exist.

I have sometimes been accused in the past of being over-pessimistic with regard to our forest situation, but I am very sorry to have to say that my worst fears have always been more than realized. It is all very well to talk of sustained yield, scientific forestry and reforestation. These words would be very comforting if we had begun adopting sane forestry methods fifty years ago; but at this late date, when we are on the verge of the exhaustion of our supply, they offer faint hope, so far as the present generation is concerned, unless we adopt some very drastic measures, measures that are going to call for an army of foresters and entomologists, and in these men, backed up by an enlightened public opinion, lies Canada's only hope for the future.

In computing the length of time our present stand of timber will last the generally accepted method on this continent in the past has been to estimate the amount of the stand, compute the amount of the cut from Government returns (which are always far below the actual cut) and deduct a supposed annual growth and then divide the result obtained with the total amount of the stand, entirely ignoring the important factor that the wastage from insects, fungi, fire and wind amounts to far more than the cut.

The argument that has always been put forward has been that the country could produce more timber than was required, and that timberlands were as high as they would ever be, and many have gone so far as to say that timber was growing as fast as it was being cut. The Forest Commissioner of the State of Maine in his report of 1902 made the statement that at the rate of the cut in the State of Maine at that time their sand would last indefinitely, as they were only cutting the amount of the annual growth, and I think it would be hard to find a man in that State who knows what present conditions actually are who would have the temerity to say that there was over twelve years' supply remaining in that State to-day.

I had a letter not long ago from one of the first, if not the first, forester who ever attempted to practise scientific forestry in the United States, a man who is not only a forester but who is one of God's noblemen, doing yeoman service for his country, in which he stated that he had been thinking over our two careers, having started in our life's work at about the same time, he as an educated forester, while I did not know a spruce tree from a hemlock, and that he had summed up the final results in two words; vision and courage. I accepted this as the highest compliment I had ever received, considering the source from which it had emanated and from the fact that in the past we had had many arguments. There was, of course, one vital fact that my good friend overlooked, and that was, as I have said before, that success in life is not measured by money alone, and I am merely referring to this little incident to prove to you that while you may not agree with all that I say to-day, this is something that I am so thoroughly well used to that you will not hurt my feelings one particle.

The sum total of my experience over this thirty-four years proves to me beyond peradventure that wind alone destroys more than the gross annual growth in our forests as they exist to-day, when you take our country as a whole. You may select sample plots in some sections where this would not apply, but viewed as a whole with the dilapidated, cut over, burned over, bugged over and blown over condition of the wooded area of this continent, you can take it as a perfectly safe principle. I have seen it sometimes stated in the past that the remedy for our deplorable situation is not in using less wood but in growing more wood. This would be all right if we had accepted this principle, as I said before, fifty years ago, but where at the very outside we have not ten years' supply of spruce, and it is going to take at least fifty years to produce a new crop, I think this is a very unwise doctrine to preach and I am thankful to say that I have not seen this suggestion offered of late. Now, even with regard to the young growth that Nature has planted, I want to say very frankly that the time it is going to take this to mature will be disappointingly long to a great many of you young men. There are many sections where the young growth starts in vigorously and quite rapidly, but as it begins to attain a size anywhere nearly approaching even to pulpwood dimensions it begins to slow up from overcrowding. On the first township of land I ever purchased more than 30 years ago, there was quite a large area covered with young poplar, which is one of our fastest growing woods, and which was then about two inches in diameter and was, as the saying goes, "growing like grass." The old woodsmen at that time told me that in ten years that tract of land would cut out 20 cords per acre. Well, gentlemen, that same tract of land has not yet been cut, and while there are some few scattered trees that will run up to 8 and even 9 inches in diameter, the bulk of it is too small to make it economical to cut. The growth was so thick on the ground that after the trees became a certain size there was not sufficient nutriment in the soil to sustain the rapid growth with which they first started in, and I have seen tract after tract of all kinds of wood where this same thing has occurred. I, as well as you, have seen individual trees and individual small plots where soil and light conditions were perfect, where trees attained a diameter of 12 inches in 30 years, but this, as I said before, means nothing insofar as our future supply is concerned, as these are the rare exceptions and not the rule. It is all very well to sit down and take a pencil and paper and say that we can plant so many trees on an acre, at so much per acre and in forty or fifty years we can harvest so many cords of pulpwood, and in theory this is all right, but int practice it does not work out.

I had a very interesting visit from a forester from India last summer who informed me that notwithstanding the fact that India had inaugurated a forest policy 55 years ago and had a staff of over 400 trained foresters which were being added to at the rate of 40 graduates per year from Oxford, they were only just beginning to see some slight result from their long campaign, and this is despite the fact that the growth in that country is far more rapid than in ours.

I do not mean to say by this that we must not plant, and that we must not practise scientific forestry and aim for a sustained yield, as this is just what we must do with all our might. I only want to impress upon you the length of time it is going to take and the practical side and difficulties of the problem, so that you may not only not get discouraged when these setbacks come, but also to emphasize the great importance of protecting and conserving our present small remaining stand in every way that is possible. I did some planting for three or four years, selecting a location that seemed to be admirable on account of its close proximity to pulp and paper mills, but one fine day about three years later the fire fiend appeared on the scene and wiped out my whole plantation in about thirty minutes.

I have in mind another plantation, considerably older than mine and very much larger, of Norway spruce that was devastated recently by the spruce bud worm, and these are merely two instances out of a great many that have come to my personal observation. I can think of one very large plantation, in fact, the largest that I know of, and upon which, I have been informed, nearly a half-million dollars had been expended, which came within an ace of being wiped out by fire during the past season, and only a very providential rain prevented this catastrophe. There is nothing that turns out just as it is laid down in books. I well remember my first experience in making bread in the woods. I had the very latest cook-book. I carefully weighed and measured every ingredient exactly as laid down in my text, but when the result came out of the oven it looked no more like bread than my burned spruce plantation looked like twenty cords to the acre when the fire got though with it. Something had gone wrong, and so it is with Nature: the odds are much greater against you than they are in the arts and manufactures. It is all very well to be optimistic; optimism is a splendid thing, provided it is rightly directed, and we do not allow it to run away with our judgment.

The history of the past is a fairly safe guide for the future, and if you will look over the records of our forest history you will find that the amount of the annual cut is not over one-tenth of the amount of the destruction by bugs, fungi, fire and wind. If we had only the annual cut to contend with, and there was no loss from the above-mentioned causes, there would today be just as much timber in Canada as there was when the country was first settled. These conditions cannot be changed overnight nor for a very long period of time. In every section of our cut-over, wooded area, the ground is covered with the dry logging slash, and all of this area that has not already burned over will be burned over sooner or later, before our country can be really protected from fire. Then the only safeguard in the future in this respect is the burning of all slash. We boast sometimes of our greatly improved fire protective measures and increased fire-fighting equipment, but at the same time our fire losses are increasing from year to year, and if very radical measures are not adopted they will continue to increase, and I want to go on record by stating that the very first dry season we have we shall experience the worst forest fires in the history of Canada. I do not see anything that can prevent this catastrophe unless the most drastic measures than can be conceived by man are adopted, which I am afraid will not be the case, judging from past experience; and in connection with our fire losses I will read an extract from a letter that I have just received from one of the best-informed lumbermen of British Columbia. He says: "With further reference to the fire situation in British Columbia during 1922, we had approximately 2,700 fires, which burnt over an acreage of 1,018,000 acres. The Government claim only eleven million feet of timber burned, but we personally know of over three hundred million feet in four fires, so that their data is not accurate in that respect. We would say that over five hundred million feet of old growth and prospective timber in the shape of young growth has been destroyed during 1922.

"In addition to this there has been an immense amount of damage by insect pest, notably amongst our yellow pine in the interior. Also, our white pine is now threatened with extinction on account of the white pine blister rust which has attacked our white pine practically all over the province and is now invading Idaho, Montana and Washington, and it may be necessary to cut all this timber in order to save it from total loss.

"1922 was the worst fire year in our history, tremendous quantities of equipment being burned, camps destroyed and countless thousands of acres of land burned over so badly that there is no hope of reforestation for decades to come. Our loggers are already begining to feel the scarcity of loggable timber, and numerous loggers from the United States come over here every month looking for investments in timber, and we can assure you that it is a very difficult matter to find anything suitable. What it will be in two or three years' time you can guess for yourself.

"There is little or no speculation in timber, the timber being bought by actual logging operators. One operator has spent over $5,000 during the past year hunting for a good accessible logging chance, but he has not yet found one."

The more we denude our lands of forest growth the drier the earth's surface becomes, and the lower the water level drops in the earth the greater the fire hazard bcomes. Many of our rivers, streams and wells were lower during the past season than ever before in the country's history. This is visibly affecting our water-powers, causing the shutting down or curtailing of many industries. One paper manufacturer told me recently that he was cutting as little as possible on his own water-sheds, as he felt that what forest growth there was left was required for the protection of his water power alone. A dam without water is as useless as a pulp mill without wood, and when I speak of a ten years' supply for our mills, I am ignoring entirely the fact that from a water-shed standpoint, an agricultural standpoint, a climatic standpoint, we should already cease cutting trees.

This may seem to you to be a very pessimistic viewpoint to take of the situation, but in the light of 34 years' experience I make this statement with a greater amount of assurance than any statement I have ever made in my life; and in all the predictions I have made in the past with regard to our forest situation I can say without fear of contradiction that not one has failed of fulfilment.

I see faces before me here now from across the line who can testify to this fact in a great many instances. I do not make this statement, as I said before, with the slightest particle of egotism, but just in the hope that my counsel may be listened to with the seriousness that our present situation calls for.

I am very thankful to say that there has been a very marked change during the past year with regard to a realization of the condition of the forest situation on this continent. Colonel William B. Greeley, Chief Forester of the United States, recently made the very frank and absolutely correct statement that the United States could not look to any other country for a supply of raw material for her soft-wood-using industries, with the possible exception of Siberia, and that even this latter country could not supply the United States with twenty-five per cent. of the amount of her annual requirements, and this statement was made after the United States had completed a very exhaustive study of the world's available timber supplies. Everyone who had the pleasure of listening to Colonel Greeley at the meetings of the U. S. Forestry Association in Boston a few weeks ago was very much impressed with all of his utterances. I know it aroused in me a new hope for the future, for until a full realization is forced upon the people as to the real situation, we cannot hope for the reforms that are absolutely necessary for a sane forest policy, and I am sure that Colonel Greeley's present statements have advanced the cause of forestry more than anything that has been said or done for a very long time.

I would like to offer for your earnest consideration the following suggestions. It seems to me that in the light of the serious situation that is facing this country, our Provincial Governments should call a conference to discuss the advisability of uniform legislation in at least the four Eastern provinces of Ontario, Quebec, New Brunswick and Nova Scotia, for the protection of our forests and the enactment of uniform slash-burning laws in all of these provinces. A universal slash law would be no hardship to anyone as the cost would simply be passed along and added to the price of the product. Certainly the cost of the lack of this provision is being borne many times over by the public in general through the tremendous loss we are suffering in our forests from this cause alone. Uniform fire preventative measures with a regular trained force of fire rangers, which should be a semi-military uniformed organization somewhat along the lines of the North-West Mounted Police; this trained force of fire rangers should be employed at other work in connection with our forests during the winter season, so that there would be a permanent all-the-year-round force of trained men, and while watching for fires, would also be on the lookout for any insect attack that may appear in the future. If we had had a trained force of this kind when the past bud worm attack first appeared, its ravages might have been nipped in the bud and a matter of eight or ten billion dollars saved to Canada. A reduction in the cut on Crown lands of at least one-half should be made. This latter would provide a market for all of the fee land or farmer's wood that is now being shipped out of the country, as we export half as much as we use, and at the same time the Dominion Government should prohibit the export of all unmanufactured wood, as this is the only action by which we can obtain a large measure of immediate conservation, and its most attractive feature is that its adoption will not cost the country one dollar. This is not a question of what Canada might like to do; it is an act born of the sternest necessity.

Without this action the pulp and paper and lumber industries, which now play so important a part in our national economy, must, sooner or later, dwindle and disappear and with them the capital which they now contribute to Canada's well-being.

There have never been more than two serious arguments advanced against this policy. One has to do with the fear of possible retaliation on the part of the United States that might ensue upon its adoption. This fear is to-day entirely groundless, whatever may have been the case in the past, for the reason that the United States authorities already recognize and admit not only the justification of such a policy as a means of preserving Canada's economic integrity, but have themselves shown the way by adopting a similar policy for the United States wherever it was to their advantage to do so.

Furthermore, there is abundance of evidence to show that they expect the Dominion to make such a move, and are only surprised that it was not made a considerable time ago.

Colonel Greeley, as a case in point, in his current annual report, forecasts the adoption of such a policy on the part of Canada and, inferentially, admits its wisdom and justification. He makes the serious statement that the United States cannot continue to look to other countries to supply its wood deficiencies. His advice to his own country is that it should put itself in a position to supply its own needs.

I am also in possession of considerable correspondence with leading pulp and paper manufacutrers in the United States, all of whom anticipate such action by our Government and who express agreement with the reasonableness of the proposed policy. Furthermore, members of Societies of American Foresters are on record as expressing in their Conventions intense surprise that Canada has not already, as a means of self-preservation, prohibited the inroads on her forests made by unrestricted exports of unmanufactured wood.

Our present deplorable forest situation in Canada has been caused by man's carelessness and indifference, and as we have simply followed the method taught by our neighbors to the South, they cannot blame us for the situation we are now facing nor for the remedy we are forced to apply, as even in this we are simply still following the lessons taught by them.

The other argument advanced against shutting off exports is that such a course, it is alleged, would deprive our settlers of a profitable market for their wood. This is met, however, by the fact that owing to the tremendous shrinkage in our wood supply, there will now be a market in Canada for every cord of wood that the farmer has to dispose of. The farmer, too, is himself the greatest wood-consumer we have, and he would profit by the adoption of any policy designed to prolong the life of the existing supply, as more than 60 per cent. of the farms are without wood, and, as a matter of fact, wood from this source actually contributes but a negligible part of the total amount exported, as not more than a small percentage of such wood is derived from the farms, so the greatest good to the greatest number of farmers would be accomplished by this action.

If any statement I make does not fully accord with your views, you must remember that even doctors disagree; and also that my knowledge of forestry has been acquired through a school of thirty-four years of hard actual experience, in the ownership and operation of timberlands on both sides of the line and over a territory extending from the State of Maine to the far end of the Island of Cape Breton. I have checked up all kinds of estimates by the actual stripping of the land and also by selective cutting, and have also noticed what happened to the land after it was cut. I have also tried my hand at reforestation and at waiting for the slow process of young growth to mature that had been planted by Nature.

I have been in disagreement on this subject with the great majority of people ever since I bought my first tract of timberland up in northern Franklin County in the State of Maine some 34 years ago, at which time I was the laughing-stock of the whole country. Old lumbermen shook their heads and said I ought to have a guardian — the very idea of a greenhorn who did not know a spruce from a hemlock, which was literally true at that time, coming down into Maine and buying timberlands at the enormous price of $1.00 per acre.

Well, all I can say in answer to the ridicule of that time is that he who laughs last laughs best, for some of the land that I purchased then has sold as high as $50.00 per acre.

I well remember my very first trip into the woods to look at this 1,500 acres of land that had been offered to me by a timberland broker of Boston for $1,500.00. I hired an old timber cruiser by the name of L. P. Dudley who has since passed to his reward. We started up an old abandoned logging road. I was such a tenderfoot at that time that I went on horseback, while he trudged along in front on foot, quite frequently cutting out a tree that had blown across the road, and I fancy occasionally making use of some language in an undertone that was not altogether flattering to myself. After we had continued on our way into the woods for a couple of miles, he finally said: "This is some of the timber that we are now passing," to which I immediately replied: "Let us stop and take a look at it." So I dismounted, and tying my horse to a tree, asked him how old these trees were, and he said anywhere from 50 to 250 years. I then asked him how many there were on an acre, and he measured off a quarter of an acre, and after counting found the growth ran about 200 trees to the acre. I then said: "You mean to say that I can buy 200 trees that have been growing anywhere from 50 to 250 years for one dollar, with an acre of land thrown in?" And he said: "Well, that is the price." To which I answered: "You need not go any farther," and I returned to Boston on the next train and closed that grade immediately, and advised all of my friends at that time if they had any money to go down into Maine and buy timberlands. Some of them did, and made fortunes; others allowed the opportunity to go by. And from that day up to three years ago I have purchased every good trade in a tract of timberland that has been brought to my attention, which was possible for me to finance.

As I have said before, and I wish to say again in conclusion, as I want you to take this serious thought home with you — the destiny of this country rests on your shoulders more than on any body of men in this country, and by this I mean the foresters, entomologists and the newspapers of Canada. You have a great responsibility, and my earnest prayer and hope is that you may use your powers wisely and well.

Research in Canada

(Adapted from an article in the Canadian Mining Journal.)

by GARNETT W. RICHARDSON

"Original Research is in itself the most powerful weapon that ever has been or ever can be wielded by mankind, in struggling with the great problems which Nature offers on all sides for solution".

Prof. Meldola

During the latter part of the late war, and since that time, the part that scientific research and discovery have played in the intense international industrial competition has had a marked effect in helping to bring prosperity again to the world. European countries have probably been foremost in this research seconded possibly by the United States. Sad to relate Canada has been somewhat backward in her research activities.

Research Officially Recognized in Canada

In 1916, by Order-in-Council, the Government of Canada established an Honorary Advisory Council for Scientific and Industrial Research. The Council was authorized to make an investigation into the various agencies conducting research in the universities, and especially, to quote from the Order-inCouncil, "to become acquainted with the problems of a technical and scientific nature that are met with by our productive and industrial intersts, and to bring them into contact with the proper research agencies for solving these problems, and thus link up the resources of science with the labour and capital employed in production, so as to bring about the best possible economic results".

When the Council commenced their investigations, they found "that scientific research in Canada was practically confined to the laboratories of two or three of our universities, and one or two departments of the Government." They also found the absence of any scientific control in the industries. Consequently the waste in our industries was tremendous, and we can easily understand the difficult task that confronted the Council. However they succeeded in directing attention to the value of scientific research by lectures, bulletins, and addresses.

A series of studentships and fellowships was established to encourage university graduates to enter the field of research, and substantial assistance was given to research, both academic and industrial. The relationship between science and industry was fully recognized by the Council, and they set about to bring "an intimate co-operation between those who could set the industrial problems, and those whose knowledge and training would aid in their solution."

In 1917 it was proposed that a Central Research Institute be established at Ottawa, to develop both scientific and industrial research in Canada. A Bill to this effect was brought before the House of Commons, and was carried almost unanimously. However, the Bill was turned down by the Senate on the grounds of economy, and has not as yet been re-introduced. As a matter of fact, though, a small grant has been given each year since that time by the Government to enable the Council to carry on a limited amount of work. It may be stated without prejudice to the Government, that every moment lost in inaugurating an adequate Research Institute means a tremendous loss in our industries, and the falling behind of our country in the ever-increasing international industrial competition. The Administrative chairman of Advisory Research Council in his report for the year ending March 31, 1920, states that "the urgency of the establishment of this Institute is of the first order of importance, and every year lost in effecting this establishment will increase the difficulties which Canadian industry will face in competition with industry abroad, aided by all the resources that scientific research will place at its command."

To Hamper Research is False Economy

Economy is no argument against the establishment of a Canadian Research Institute. Anyone using this argument shows lack of information on the real value of research. A few results of scientific research in some other countries may be given here appropriately. In the United States at the Mellon Institute in Pittsburg, a few years ago a research into improved methods of bread making was undertaken, at the instance of an association of bakers. With the expenditure of some $5,000. certain discoveries were made almost immediately that enabled the bakers to affect a saving of $500,000 annually. Needless to say, the bakers paid the investigator a very generous bonus. A few other cases relating to the financial returns from research in the United States may be cited. In one case an industry, founded with a capital of $25,000, had accumulated $200,000 of assets at the end of two years, and was doing a business of $1,000,000 annually. In another case an industry started in a small way was making a monthly profit of $50,000 at the end of eighteen months, during the first six months of which the business was in the experimental stage. It has been stated authoritatively that over fifty industrial concerns in the United states have established research laboratories on an extensive scale and many of these expend from $100,000 to $300,000 on research work alone. The most prominent Government research agency in the United States is the Bureau of Standards, at Washington, D. C. This establishment employs about three hundred scientific workers, and handles the greatest diversity of problems. It tests and conducts original researches on papers, textiles, structural and other steels, building and roofing materials, cements, paints, inks, chronometers, thermometers, barometers, electrical apparatus of all sorts, radio-active preparations, and in fact anything and everything to which a mechanical, physical, or chemical test can be applied.

Official Aid to Research in Britain and Elsewhere

In England, during the course of the war, a State Department of Scientific and Industrial Research was organized, and a fund of a million pounds was placed at the disposal of the Department of research work. One of the foremost activities of this Department has been in getting together manufacturers in the same industry for the founding of research laboratories on a co-operative basis. In connection with the mining industry, studies have been made of the carbonization of coal, light alloys, refractories, concrete, the corrosion of non-ferrous metals, insulating oils, and many other such problems. Great economies have been effected in the recovery of tin from the mines in Cornwall. Porcelains imported in considerable quantity from Germany before the war have been replaced by very satisfactory substitutes made from British clays. Also, for the furtherance of research in the mining industry the British Non-Ferrous Metals Research Association has been formed and is doing very valuable work.

An instance in England of the value of authoritative scientific counsel in its relation to industry may be instanced. One of the largest steel corporations in England had, until 1914, been importing from Austria through a [illegible] supply on hand. As time wore on and the supply diminished, the directors were obliged to call for scientific advice. They were referred to the geologists, who informed them that a bountiful supply of the material in question was available in the immediate vicinity of their plant. This information was acted on, with the result that the company is now mining in sufficient quantity on its own account the material formerly imported from Austria at many times the present cost.

France has kept pace with other countries, and has [illegible]. In Japan an Institute for Physical and Chemical Research has been established, at a cost of over two million dollars, this expenditure being shared equally by the Government and the manufacturers. These are only a few instances of the research work being done in other countries; innumerable other instances might be given. It is apparent that if Canada is even to keep her present status in the present international industrial competition, greater attention must be given to the fostering of scientific institutions. It should be the duty of the Government to grant a liberal sum for the establishment of research laboratories, and for their maintenance for a limited period of time, until the industries concerned could take them over. Then the prosecution of industrial research on a co-operative basis could be delegated to the interests themselves, an association of manufacturers in each branch operating the laboratories for the common benefit.

What is Research?

Occasionally we find persons having only a vague idea [illegible] really [illegible]. The [illegible] Hon. Lord Moulton, K. C. B., F. R. S., in his introduction to the volume published by the Cambridge Press entitled "Science and the Nation", says, "the word 're-search' has of late years been used too frequently as little more than a cant phrase, dear to educationalists, but carrying with it no clear or definite meaning, and if there is any patent or latent hostility to research it is mainly due to the way in which the word has thus been treated by its self-styled champions. But (as I am glad to say is frequently the case even in the arena of legal conflicts) the blunders of the advocate have not been sufficient to hide the merits of the case. Not only thoughtful educated men but even numbers of the general public are beginning to realise that it is to research in its proper signification that we owe the knowledge of the wealth of the world in which we are placed —of the power that is within our grasp. The man engaged in research is like the mining prospector who may discover that rocks, which seem to the ordinary eye indistinguishable from the barren masses that surround them, are in reality teeming with riches. But for research one would never have known that the coal-[illegible] entering into combinations of such novelty and complexity that they now furnish the whole world with [illegible] application of research to the problems of metallurgy that has caused the additions to our knowledge of metals during the last 50 years to be greater than all that has been learnt in the ages that had elapsed since man first began to work metals. And what is most remarkable of all, we find that through the introduction of research the empirical handling of the problems of organic life is being step by step replaced by an assured treatment based on a conscious and realised connection between cause and effect. All these changes are due to Research. Scientific research has removed our previous ignorance of the properties and powers of the things around us and has taught us what they are and how they can be used. It is not too strong a simile to say that without the teaching of Science man blunders through life much as a card player would blunder through a game of cards if he did not take the trouble to look at the cards in his hand and learn their value."

Canada's Opportunity

The opportunities for research in the pulp and paper industry appear unlimited. In Canada we have the mineral resources and the young industries, and the right type of young men to make a success of research work. I am not overlooking the older men, the trained scientists of to-day. No doubt we have in Canada at the present time as good scientists as there are in any other country in the world; but we must look to the young men to take their place and advance the field of Science. It may be safely said, that any young man entering the field of Science will be entering a field full of the finest fruits of nature.

We have the material in Canada, and if this fair Dominion is going to keep pace with other countries, we must have a strong, intelligent Government lead in the field of Scientific and industrial research, and hearty co-operation among our industries for the furtherance of the interests of each and all.

NIPIGON POWER CONTRACT

Toronto, Feb. 1.—The Ontario Hydro Commissioners failed at their meeting today to agree to accept the contract which the Gregory Commission had drawn up to govern the sale of power by the Nipigon branch of the commission to the Great Lakes Pulp and Paper Company. The opinion of certain members of the commission was that the Gregory arbitrators had stipulated too low a price for the power.

HOW HOOVER USES THE NEWSPAPERS

A world-wide information service revealing to American business opportunities for the sale of raw materials and manufactured products across the seas has been [illegible] by the department of commerce under the [illegible] of Secretary Herbert Hoover.

[illegible] months than all [illegible] Paul J. Croghan, [illegible] the department, has [illegible] news gathering [illegible] with more than 1,000 correspondents, scattered in every corner of the globe, and he has increased his "bona fide circulation" from [illegible].

Working through the newspapers Secretary Hoover [illegible] the activities of the U. S. Department of [illegible] 6,000,000 readers. In Canada the Department of Trade has issued regulations forbidding the giving out of information to the newspapers; Commissioners are even forbidden to answer inquiries regarding industrial and trade opportunities.

Hoover is a business man who conducts the U. S. [illegible] Department in a business way. In Canada the Department of Trade and Commerce is evidently still floundering along in the old rut. Washington recognises the value of the newspapers; Ottawa ignores it.

—Financial Post.

PULP AND PAPER NEWS

E. S. Munroe, of the Wilson-Munroe Co., wholesale paper dealers Toronto, and wife, have gone on a visit to St. Petersburg, Florida, where they will spend the next few weeks, Mr. Munroe is Treasurer of the Canadian Paper Trade Association and his many friends will wish him a pleasant winter holiday.

T. J. Allen, vice-president of Paper Sales, Limited, Toronto, who has been ill for the past three weeks with pneumonia, has sufficiently recovered to be able to resume his duties.

Cecil Burgis, who for the past year and a half has been a member of the sales staff of the Hodge-Sherriff Paper Co., Toronto, has resigned and will go into business for himself specializing in twines and other lines.

Westminster Paper Mills, of New Westminster, B. C., which recently started operations, is visiting Toronto and other eastren cities on a selling trip.

Fred. Arnott, of Vancouver, sales manager for the Westminster Paper Mills, of New Westminster, B. C. which recently started operations, is visiting Toronto and other eastern cities a selling trip.

The third annual meeting of the Allen Paper Co., Limited, Toronto, was held last week and a satisfactory report presented on the operations of the past year, Charles E. Allen was re-elected President and H. G. French, Secretary-Treasurer. During the year the company doubled its floor space in order to take care of increasing business and stock.

Harry L. Muir, of the sales staff of the Don Valley Paper Co., Toronto, who was confined to his home for several days with the flu, has returned to his duties.

John Martin of the John Martin Paper Co., Winnipeg, and former President of the Canadian Paper Trade Association, accompanied by Mrs. Martin, arrived in Toronto during the latter part of the week and will leave on a visit to the West Indies Islands Mr. Martin recently returned from a business trip to the Pacific Coast.

Mr. Gamble, of Three Rivers, Que., superintendent of the Wayagamack Pulp and Paper Co., spent a few days in Toronto last week on business.

At the annual meeting of the United Paper Mills, Limited, which was held in Toronto recently, an encouraging report was presented on the operations of the past year. R. I. Finlay, was re-elected President, Harold G. Finlay, Vice-President and E. L. Young, Secretary-Treasurer. The company reports that business during the past month showed a considerable increase over the volume of the corresponding period a year ago.

George H. Allen, of the John Martin Paper Co., Winnipeg, was a caller on the trade in Toronto during the past week.

Formal notice has been given to the effect that the shares of the Laurentide Co. have been listed on the Toronto Stock Exchange. The company has twenty eight million dollars of common outstanding.

The annual meetings of the Kinleith Paper Co., Toronto, and W. J. Gage and Co., Toronto were held lately. H. F. E. Kent, who is the President of the Canadian Pulp and Paper Association, was re-elected President of the Kinleith Co.; H. H. Love, Vice-President; A. G. Parker, Treasurer and George H. Jefferson, of St. Catharines, Secretary. It is announced that the plant of the company at St. Catharines is now running to capacity. All the old officers of W. J. Gage and Co. were returned for another year as follows:— President, H. H. Love; Vice-President, H. F. E. Kent; Secretary-Treasurer, A. G. Parker. The latter organization report that business in the envelope and manufacturing stationery line is considerably better than it was a year ago and the prospects are bright.

A. F. Rutter, of Warwick Bros. and Rutter ,manufacturing stationers, Toronto, last week celebrated his sixty seventh birthday. During this year it will be fifty years since he became connected with Warwick Bros. and Rutter. He has always been a public spirited citizen. When the fire disaster in Northern Ontario last fall, robbed thousands of their homes, Mr. Rutter was among the first residents of Toronto to start measures for relief. On Sunday morning following the conflagration when a depot was opened, he assumed the job of door man and traffic director to the thousands of citizens who came to bring their gifts to the fire sufferers.

It is announced that large quantities of pulp wood are coming down the Algoma Central railway, some fifty cars being handled daily over half of which are for the mills of the Spanish River Pulp and Paper Co. at Sault Ste. Marie. The camps operated by the Spanish River Co. are located in Irving and Franz townships and the company is also taking wood cut by settlers in the townships of Lowther and Way near Hearst Ont.

Fire broke out last week in the premises occupied by the Levi's waste paper dealers on John street, Toronto, and did damage to the extent of several thousand dollars. The company have opened temporary offices at 86 John street and announced that there will be no interruption to business. The Levi's lost their sorting plant and storage warehouse on the Don Esplanade some time ago but repairs have been made and the premises are once more in use.

The Algoma Central Railway and the Spanish River Pulp and Paper Mills were the successful bidders for the timber in Hawkins township, which was recently sold by the Department of Lands and Forests of Ontario. A joint tender was put in by the two corporations at the following prices-Jackpine $3 per thousand feet; railway ties, 10 cents each, spruce pulpwood 80 cents per cord and other pulp wood 40 cents per cord. The township consists of eighty one square miles and a bonus was received on the pulp wood over and above the customary dues.

Ross Keane, who for some years has been managing editor of the Daily Herald, Stratford, has joined the staff of the James Fisher Co., Limited, advertising agents, Toronto and previous to his departure, was presented with a gold watch and chain by the Herald staff and substantial purse by the Herald Co.

The steel work is now being erected for a new concrete and brick building for the Border Cities Star at the corner of Pitt and Ferry streets in Windsor, Ont. The structure will cost about two hundred thousand dollars and will be one of the finest newspaper properties in Ontario, three storeys high and, 85 x 100 feet in dimensions.

A provincial charter has been granted to the firm of Letherby and Chew, Limited, Midland, Ontario, with an authorized capital stock of $700,000. The new concern will take over the sawmill and timber business of Chew Bros. and the principals are Ed. Letherby and Manley Chew, M. P. Midland. The concern is empowered to carry on a general forest products trade and also make and deal in pulp, etc.

C. W. Cox, pulpwood contractor of Port Arthur, Ont., was recently fined thirty dollars and costs for failing to carry out the rules and regulations of the Ontario Provincial Board of Health, in connection with sanitary arrangements in a camp located in the vicinity of Silver Mountain. Mr. Cox said that the camp was only a temporary one and, when visited by the inspectors housed, in addition to a number of teamsters, a large number of transients. It was stated at the trial that the place was ill ventilated and there was not the required amount of cubic feet space for each laborer. As it was the first case of its kind taken into his court, the magistrate said that he would content himself with making the fine a nominal one instead of imposing the full penalty, possible under the act, of five hundred dollars and costs.

F. A. Ritchie of Ritchie and Ramsay, coated paper manufacturers, Toronto, leaves in a few days for a winter holiday in Damerera, South America.

PRICE BROS. TO REDEEM OUTSTANDING BONDS

Price Bros. and Co., Ltd., announce that they are calling in all their outstanding 5 per cent. bonds at 102 1-2 and accrued interest to May 1, the date set for the redemption. Notice to that effect is being given by the Montreal Trust Company, the trustees for the bondholders.

These bonds are dated Nov. 1, 1910, and in the last annual balance sheet as of Feb. 28, 1922, the amount outstanding was $4,770,696, less $1,228,833 redeemed and $385,447 was available for further redemption.

The Bondholders are requested to present their bonds for redemption on May 1, 1923 at the Montreal Trust Company in the City of Montreal, or at the office of the Bank of Montreal in the City of Montreal, Toronto or Quebec, or at the Agency of the Bank of Montreal in the City of New York, or at the office of Parr's Bank, Limited, in London, England.

Interest on the said bonds will cease to accrue from and after the first day of May, 1923.

OUTLOOK FOR NEWSPRINT

Sir Frederick Becker, who is at present in Canada, is credited in a New York interview with the opinion that the price of newsprint will continue to rise as long as the newspapers of the United States and Canada continue their present rate of circulation. "The maximum production of the present paper machinery has been reached," he is reported to have said, "and the plants of Canada are working at capacity output. It will be only a short time until the newsprint industry of the United States and Canada reaches the billion dollar mark." Sir Frederick's views are of interest, although in respect to the price of newsprint they differ somewhat from those of other heads of the industry. Many feel that a stabilization of price would be more in the interest of the industry than an era of advancing prices. Much depends upon the rapidity with which the scene of to Canada. This change is taking place, perhaps, more paper manufacturing activity shifts from the United States rapidly than is generally realized, and the heads of the industry seem to have no fear that over-production will be given rise to by the expansion which is already taking place in this country.—The Gazette.

DAWE ADVISES EXPORTERS

No matter how ridiculous the shipping instructions are, it is sound procedure to follow them, was the statement made to the export trade class at the Toronto University Extension Course, in a paper prepared by A. L. Dawe, Montreal and read by E. H. Wilkinson, in Toronto last week. It was stated that the reputation of Canada as to packing and shipping was favorable in foreign markets. This was an advantage over the United States as, he stated, there were unsettled claims for millions standing against United States mills for faulty packing no export business secured by them immediately after the armistice. In dealing with the packing question Mr. Dawe cited an order received from a buyer in Belgium who requested that shipment of a certain kind of paper be wrapped in small bundles giving length, breath and weight. This seemed to be an unusual request in connection with this particular kind of paper, and on investigation it was found that the Belgium buyer was ordering these goods for an importer in South America and the destination was some hundreds of miles inland. The shipment had to be carried to this buyer on the backs of mules. Another case was given where a buyer in India requested that the bands on the bales be painted red. Upon investigating this seemingly peculiar request it developed that the purchaser required this for more ready identification.

GERMANY DOWN

Trade with Germany has dropped considerably. In 1913 British mills bought from Germany 39,440 tons of unbleached chemical; in 1922 the business done in the same kind of raw material was only 1,282 tons. In bleached chemical, trade has fallen away from 2,080 tons in the pre-war days to 812 tons last year. This is not progress on the part of Germany, whose position at the moment. I write is rendered all the more precarious as the French have occupied a considerable position of the German state forests. It is not definitely known what the French propose to do with the forests and German pulp men are reported to be very anxious over the action of the French.

Sweden has also lost ground in her sales of pulps with the British market. Canada and Finland have captured them while a considerable falling off is also noticeable in the case of Norway. These interesting facts are observable in the imports of groundwood, when compared with 1913, which was reckoned as a good year in the British pulp and paper industry:—

ROOFS OF WESTERN CEDAR SAVE COAL TO OWNERS OF BUILDINGS

Roofs constructed of western cedar should have great advantage over those built of other materials according to the Forest Products Laboratories of Canada, Forestry Branch, Department of the Interior. In heating a building covering a large area a great amount of heat is always lost through the roof ad a considerable saving in fuel can be effected by making the roof of suitable material. In this respect wood is very suitable and of all the woods which are likely to be used western cedar is probably the best non-conductor of heat. It is obtainable in large quantity and of good quality and has the further advantage of possessing a natural resistance to decay even under the most adverse conditions.

Do not allow loose ends of clothing, such as neckties, jumpers, or dusters to hang out, when around moving machinery.

CANADA'S PROGRESS IN BRITISH PULP TRADE

(From our London Correspondent)

London, January 24. — A remarkable feature of the amount of business transacted in 1922 by the British buyers and importers of pulps, is the progress Canada has made. Canada now occupies an important position amongst the countries supplying pulps, while Sweden and Germany, are fading into the background. British buyers are gradually creeping back to their pre-war trade and in this recovery, which is moving with the policy of reconstruction, Canadians cannot be took keen in watching their interests on this side of the Atlantic

According to the figures just announced by the Board of Trade, the following shows the position for 1922, compared with the pre-war days:

Pulp of all kinds

	Tons	Value
1922	925,614	£8,536,730
1921	589,552	12,619,372
1913	977,957	4,617,687
1912	925,590	4,418,420

These figures are interesting because they show the great difference in prices and that up to 1922 the pre-war trade of 1912 has only been reached in pulps.

Groundwood Totals

	Tons	Value
1922, wet	554,638	£2,825,685
1922, dry..	10,812	98,797
1921, wet..	367,957	4,277,901
1921, dry..	3,394	54,964
1913, wet	557,187	1,263,769
1913, dry	8,967	41,557

In the shipments of dry mechanical pulp for 1922. Canada contributed a good quota.

The shipments from all sources for mechanical wet were as follows:—

	Tons 1922	Tons 1921	Tons 1913
Sweden..	116,579	25,981	124,509
Norway	268,718	191,876	311,861
Canada..	144,656	133,416	69,090
Other Places	24,685	16,684	51,727

The position of Canada will be seen at a glance at these figures, as they give some indication of trade being diverted from Scandinavia to the Dominian. This is only in the case of wet mechanical.

The values for 1922 are as follows: Sweden £540,198; Norway, £1,346,455 (for 268,718 tons compared with Sweden's 116,579 tons). Canada £804,370 (for 144,656 tons as against Sweden's 116,579 tons at £540,198).

Chemical Pulps

The total supplies of chemical plups reaching the United Kingdom in 1922 was 360,164 tons, compared with 218,201 in 1921 and 411,803 in 1913. It is in the sale of chemical pulps that recovery of the pre-war trade is slow, while the mechanical sales are well up to 1913. Canada also enjoys a good share of the trade in chemical pulps.

The countries supplying unbleached chemical were as follows:—

	1922 Tons	1921 Tons	1913 Tons
Finland..	46,903	11,272	40,611
Sweden..	185,239	138,684	241,193
Norway..	48,606	31,659	45,681
Germany..	1,282	5,104	39,440
Canada, etc.	34,418	15,659	7,759

The countries supplying bleached chemical were as follows:

	1922 Tons	1921 Tons	1913 Tons
Finland	1,840	400	1,017
Sweden	6,056	3,389	2,243
Norway	10,506	8,819	12,543
Germany	812	326	1,532
Canada, etc.	2,653	1,291	3,287

Considering the depression in trade generally at the beginning of 1922 and right up to July and August, it cannot be said that the pulp imports are disappointing. The rush in the newsprint mills is reflected in the mechanical figures and when all the facts are considered carefully the position of the pulp trade in the United Kingdom during 1922 was not at all bad. One thing is certain and that is we are not going back in trade; we are progressing and in that progress Canada is taking an interesting part, which requires careful study and watching for future developments.

Prices—Past and Present

Turning to the market generally in England there is a better feeling today than was the case at this time in 1922. This is accounted for by the change of Government we had sometime ago, but it wants the political situation in Europe made more stable and the rates of exchange properly adjusted with foreign countries before we can safely say we are out of the wood. In Germany the feeling over France's recent action has upset business considerably, while Sweden is getting ready for a lock-out in pulp and paper circles. But in England there is a good optimistic feeling and we feel we are getting round the corner for more business and more trade.

A glance back at prices is worth recounting at this period of the year. Here are some for January, present and past:—

	1923	1922	1914
Bleached Sulphite	£23½	£22½	£11
Easy Bleaching	15	16	8¾
Newsprint No. 1	13½	15	7¾
Unbleached Soda	14	13½	7¾
Soda Kraft	13½	12½	8
Groundwood, wet.. ..	5¼	5½	2⅛
Groundwood, dry.. ..	10	11	4¼

The difference in prices between 1914 (January) and the present are interesting. Roughly prices have doubled, but there is a chance of doing business on better quotations in 1923 than was the case last year, except in regard to groundwood which has hardened somewhat within the last couple of weeks.

The feeling, however, in the market today is good — and we are pushing ahead.

Walmsley's Machines

The new machines for the new mill which Edward Lloyd are erecting at Kemsley Downs, Sittingbourne, (Kent), will be supplied by Charles Walmsley & Co., Ltd., Bury. They will be the largest installed in England.

Walmsley's are also working on a 234-in. newsprint machine for the Donnacona Paper Co. Ltd., of Quebec. They have now 15 machines on order to complete.

The man of worth is really great without being proud; the mean man is proud without being really great. Chinese.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Products.

A-1 The Cellulose Content of Pulp Wood. H. E. WAHLBERG. **Svensk Pappers Tid.** xxv, 84-85 (1922); **Chem. Abs.** xvi, 4342 (Dec. 10, 1922). A sample of wood from the annual rings 53 to 50 gave 47.8% cellulose at 120 digestion temperature (with bisulphite liquor) and 48.8% at 125. The cellulose number (in kilos per solid cubic meter) for two different spruces and one pine was found to be 175, 263, and 220 respectively. The discrepancies may be due to fat and resins rendered insoluble during storage, uneven distribution of lignin substances or differences in the cell structure; but the author is unable to determine which has the greatest influence. Each pulp manufacturer should determine the cellulose content of his own woods.-A.P.-C.

A-1 E-2 Lignin Investigations. Sulphur-Containing Lignin Acids Separated from Sulphite Waste Liquor by Means of Salt. K. H. A. MELANDER. **Svensk Pappers Tid.** xxiv, 377-379, 396-402, 440-442, 461-463 (1921); **Chem. Abs.** xvi, 4342 (Dec. 10, 1922). (Compare MELANDER, this journal xx, 814, Sept. 21 1922). The author describes experiments carried out for the determination of the molecular weight of compounds extracted from sulphite waste liquor. He concludes that the molecular weight of alpha-lignin-S-acid lies between 650 and 706 and is probably 682, that it is not a multiple of the equivalent weight, and that the molecular weight of sulphur-free alpha-lignin is about 600. The degree of dissociation of alpha-lignin-S-acid and of its sodium salt was determined at various concentrations. Experiments with alpha-lignin-S-acid are also described which show: the sulphur is not attached to an aldehyde group (CHO); SO''_4 is present; it is a mixture of similar sulphonic acids in which part of the sulphur is in ester form; the presence of a primary alcohol group (CH_2OH) is indicated. The preparation of vanillinic acid, pyrocatechol, protcatechuic acid, and acetic acid from the products precipitated by sodium chloride is described in detail.-A.P.-C.

A-3 Digestion of Typha Domingensis. EMIL HEUSER and Jan HAUGEROD. **Papier-fabr.** xx, 253-262 (March 5, 1922). Translation by C. J. West in **Paper Trade J.** lxxv, No. 1, 32, 34, 36 (July 6, 1922). See this journal xx, 500 (June 15, 1922). **P. T. J.** lxxv, No. 25, June 22, 1922.-A.P.-C.

A-4 Highly Pressed Sulphite Pulp. Svensk Pappers Tid. xxv, 100-101 (1922); **Chem. Abs.** xvi, 4342 (Dec. 10, 1922). The water content of pulp reaching the drying cylinder with 64 to 65% of water can be lowered to 45 to 50% by rotary presses with consequent steam saving of 29 to 41%, but the pressed pulp from some mills is said to be less easily bleached, not so easily separated in the beater, of poorer color and lower strength. A comparison of ordinary highly pressed sulphite and of papers made therefrom has been made by Bergman and can be obtained by V. Henriksgatan 16, Helsingfors, Finland.-A.P.-C.

A-4 Influence of Bleaching on Pulp Consistency (Degree of Disintegration) of Sulphite Pulp. L. EKHOLM. **Svensk Pappers Tid.** xxv, 179 (1922); **Chem. Abs.** xvi, 4345 (Dec. 10, 1922). Pulp was treated with 1 to 9% of chlorine. Pulp was bleached with about 4.5% of chlorine. The degree of disintegration rose rapidly: 14.1 with 1% of chlorine, 15.1 with 2%, 16.1 with 3%, 16.65 with 4%, 18.45 with 5%. From unbleached to fully bleached cellulose the percent. of disintegration was about 25. The author suggests that when the incrustations are dissolved out, the lignin on separating allows the bunches of cellulose to drop apart into separate fibers.-A.P.-C.

A-4 The Reddening of Sulphite Pulp and Its Prevention. EMIL HEUSER and SIGURD SAMUELSEN. **Papier Fabr.** xx, 1249-1254, 1285-1288, 1321-1326 (1922). Abridged Translation by C. J. WEST in **Paper Trade J.** lxxv, No. 18, 51-53 (Nov. 2, 1922). Review of the literature leads to the view that the red coloration of pulps occurs in easy as well as in hard bleaching pulps, and that it is associated with a certain degree of moisture content, and the action of light and air. Thus the process is one of oxidation. Other stronger oxidation agents, such as hydrogen peroxide, potassium chlorate, etc., also cause reddening. Of the two possible sources of this colored material, the tannins and the lignins, the latter are shown to be the more probable. All preparations when treated with oxidizing agents, gave the same color effects as the unbleached pulp or the waste liquor. Further proof of this is seen in the fact that protocatechuic and vanillinic acids, decomposition products of lignin, likewise give these color reactions. The red color is discharged by mineral acids and does not return as long as acid is present. Upon being washed acid-free, the color returns. 0.5% alkali causes a yellow coloration of the red pulp or paper, but does not prevent return of the red color. Reducing agents destroy the color, but later oxidation causes its return. Oxidizing agents, such as bleaching powder, hydrogen peroxide, potassium permanganate, etc., will destroy and prevent the return of the color only if used in such quantities as to produce complete bleaching of the pulp. A small amount only intensifies the color. On the other hand 0.5% of potassium persulphate in the presence of dilute sulphuric acid completely destroys the color and prevents its return. The time of treatment is about 9 hours. The sulphuric acid may be replaced by aluminium sulphate so that there is no damage to the fibers. The pulp does not need to be washed after the treatment. The treated pulp is practically unbleached, contains the same amount of lignin as before, and apparently the total lignin has been changed in some unknown manner so as to render it unsusceptible to further oxidation. A.P.-C.

A-6 Heating Air for Burning Low-Value Fuels. M. T. LINDHAGEN. **Svensk Pappers Tid.** xxv, 304-306, 324-328 (1922); **Chem. Abs.** xvi, 4323 (Dec. 10, 1922). To ascertain the most efficient temperature of air for burning fuels of low value with different excesses of heated air the author has determined, and gives graphs for, the theoretical burning temperatures for different [illegible] air and of [illegible] theoretical [illegible] tures of wood [illegible] theoretical boiler temperature for variations in primary [illegible] excess air. [illegible] wood [illegible] value at 100, 200 [illegible] moisture at [illegible] temperature. [illegible] when burning wood containing 50% moisture with 150% excess air [illegible] of average quality, but about 30% higher with 100% excess air. Lowering the temperature of the flue gases lowers these losses. [illegible] waste gases at 250 [illegible] moisture for drying fuel and for warming air. English, French, [illegible] are described and compared.-A.P.-C.

A-6 Wood Fuel. M. T. LINDHAGEN. **Svensk Pappers Tid.** xxv, 235-236 (1922); **Chem. Abs.** xvi, 4321 (Dec. 10, 1922). [illegible] Scholdstrom curves for burning wood by taking into account the specific heat of the flue gases. He shows graphs for different degrees of moisture and different carbon dioxide contents. The actual conditions cannot be shown by a diagram simlar to those of Schibbe and Scholdstrom.-A.P.-C.

A-12 K-10 Rosin Sizing. [illegible] SIEBER. **Zellstoff u. Papier** i, 15 [illegible] ii, 99-103, 134-139 (1922). Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 15, 49-53 (Oct. 12, 1922); No. 16, 43-46 (Oct. 19, 1922); No. 17, 59-61 (Oct. 26, 1922); No. 20, 50-53 (Nov. 16, 1922). See this journal xix, 1309 (1921); xx, 412 [illegible] 1031 [illegible] 23, 1922).-A.P.-C.

A-14 The Determination of Groundwood in Printing Papers. H. KRULL and B. MANDEVKOW. **Papierfabr.** xx, 1213-1216 (Sept. 3, 1922). Translation by C. J. WEST in **Paper Trade J.** lxxv, No. 18, 49-51 (Nov. 2, 1922). The determination of the phloroglucinol value, carried out exactly according to the method of Cross, Bevan and Briggs, affords a convenient and accurate measure of the percentage of groundwood in news and similar printing papers. In calculating the results, however, the original factors 8 for groundwood and 1 for sulphite cannot be accepted as sufficiently accurate. The true average values for these factors are 7.84 and 1.34 for unbleached strong sulphite. The error involved by using the original factors is negligible for papers containing 65 to 75% of groundwood, but considerable in the case of papers containing low percentages of that constituents. The corrected formula for calculating the results, expressed on the dry substance, is $H = 100(P - 1.34)$, where H is the percentage of groundwood and P is the phloroglucinal absorption value of the paper.-A.P.-C.

A-14 Paper Testing Methods. Paper Trade J. lxxv, No. 1, 48-55, No. 2, 43-48, No. 3, 45-48, No. 4, 43-48, No. 5, 47-50, No. 6, 43-48, No. 7, 46-48, (July 6, 13, 20, 27, Aug. 3, 10, 17, 1922). A detailed description of microscopical chemical and physical methods used in paper testing and of the apparatus employed, compiled by the Committee on Paper Testing of the Technical Association of the Pulp and Paper Industry. A considerable bibliography [illegible] print.)-A.P.-C.

A-15 The Bursting Strength of Paper: Variations in Results Under the Same Conditions. E. O. REED and F. P. VEITCH. Bureau of Chemistry, Washington, D. C. **Paper Trade J.** lxxv, No. 3, 49-52 (July 20, 1922). Results of Mullen tests on 32 samples of paper representative of the chief classes of commercial papers are tabulated and discussed, and the authors draw the following conclusions: Provided the instruments are properly equipped and adjusted, the differences between averages on several testers are negligibly greater than those between averages on the same tester. [illegible] are sufficiently great to show that at least 10 breaks should always be made. Approximately 90% of all comparable averages differed less than 3 points. Expressed as percentage, the maximum differences between averages of 10 breaks on different machines are from 3 to 20% and the percentage differences are usually decidedly greater on papers of low bursting strength. The difference between breaks at different points in a sheet is much greater than the difference between readings on different gauges on the same break. The normal differences between individual breaks on the same sample and on the same tester may reach 40% of the minimum result on paper of practically any class; usually this difference is much less being nearly 20%; on wrapping it may reach 100%. In important work at least 10 tests (1 test on each sheet) should be made; two testers or two gauges on the same tester should be used.-A.P.-C.

A-15 K-7 Parchmentizing Paper and the Reaction of Mordants. J. F. MINOR. **Science** [illegible] 25, 1921); **Chem. Abs.** xvi, 4345 (Dec. 10, 1922). The work of Schwalbe and Becker confirms theories of the author as to the reactions which occur in the decomposition of cellulose during beating (See MINOR, this journal xix, 742, July 14, 1921). The hydrolysis of cellulose forms dextrins which are mucilaginous, soluble in water and easily reduce Fehling's solution. These dextrins are readily adsrobed by pure cellulose, thus constituting the reacting, insoluble colloidal hydrocellulose and in this position they catalyze further cellulose hydrolysis. Complete hydrolysis leaves only soluble dextrins or sugars. For a mucilaginous accumulation such as is desired for making parchment paper, the velocity of the inital reaction must be catalyzed, either by the hemicelluloses of wood incrustation or by an acid treatment of the pulp prior to beating. Acid treatment reduces the time required to beat to mucilage to from one-half to one-tenth of the original time required, and increases the strength of the paper made from it. Pulp mucilage has a greater power of splitting salts and absorbing metal irons than has cellulose and assists in holding size, dye, coating, etc. Metal impregnation weakens the strength of the paper.-A.P.-C.

CORRECTION

Determination of the Bleach Requirement of Pulp

In the paper on this subject in the Pulp and Paper Magazine on p. 53, Jan. 18th., the following changes should be made:

In the 4th paragraph and 9th line, change "consumed" to "added."

The foot note should read "Zellstoff und Papier II, No. 11, 1922, page 258."

On page 54, 1st line, 2nd column, insert "as" after "decreases."

The 2nd and 3rd equations should read:

$$\% \text{ Cl} = \text{Cl C. No. } [0.104 + \text{Cl C. No. } (0.00144)]$$

$$\% \text{ Cl} = \text{P. No. } [0.415 + \text{P. No. } (0.025)]$$

UNITED STATES NOTES

Stockholders of the Kalamazoo Vegetable Parchment Company at the annual meeting held recently in Kalamazoo voted a bond issue of $3,000,000 to be offered for sale whenever needed. A summary of the past year showed that the company's business has been generally satisfactory and rapid progress is being made on its vast building and expansion program. The officers elected for the ensuing year are: Jacob Kindleberger, president; Frank Mosteller, first vice-president; James Greenlee, Chicago, second vice-president; S. Ward Kennedy, secretary and C. S. Campbell, treasurer.

New York associations of paper box men met in New York City last week in annual conferences. The business meetings were well attended and highly optimistic views of the outlook in the trade and industry were the keynote of most of the speakers. The Metropolitan Paper Box Manufacturing Association chose the following officers for the ensuing term: E. H. Rogers, president; Walter E. Trum, vice-president, and Harry Edwin Rodin, executive secretary. The Greater New York Paper Box Supplies' Association elected D. J. O'Connell, president; Charles W. Rider, vice-president; John A. Hayden, treasurer, and Harry Edwin Roden, executive secretary and managing director.

At the annual meeting of the Allied Paper Mills of Michigan, Alex G. Gilman was chosen to succeed Arthur L. Pratt, who is retiring after having headed the King Paper Company and the Allied Paper Mills during the past twenty-two years. Mr. Pratt's retirement is due to poor health. He has been retained as chairman of the board of directors in recognition of past services and will preside at the meetings of that body when in Kalamazoo. The new head of the corportion, Mr. Gilman, has been a resident of Kalamazoo for seventeen years, during most of which he has been associated with the Monarch Paper Company. He obtained his first experience in the paper industry in the East. When he moved to Michigan he became employed by the Peninsular Paper Company of Ypsilanti. Later he joined the forces of the Monarch Paper Company, beginning as a stenographer and bookkeeper. He rose rapidly to official places and was made first vice-president of the Monarch when that concern was consolidated with the Allied Paper Mills. Mr. Gilman is very popular in Kalamazoo and is a familiar figure to the trade in the Middle West. Other officers elected at the annual meeting are: George H. Gerphide, first vice-president; John A. Pyl, second vice-president; George S. Davis, secretary, and S. B. Monroe, treasurer.

The Crescent Paper Company, Marseilles, Ill., has just been acquired by the National Buiscuit Company. It was announced that there will be no change for the present in the personnel of the management.

A recent fire at the Bardeen division of the Allied Paper Mills resulted in a loss that will run into thousands of dollars. The principal damage was sustained in the stock room where water caused loss in stock and pulp that was not touched by the fire.

A charter has been issued in Ohio to the Crystal Waxed Paper Company of Middletown. The new concern grew from a merger of the Shelby Wax Paper Company of Shelby and the Crystal Tissue Company of Amanda. The capitalization is $100,000. The entire equipment of two mills has been acquired and will be utilized by the Crystal Waxing Company. Z. W. Ranck. C. O. Sellant and W. H. Muchmore are the incorporators. Plans have been made to put the plant in operation in the near future under the management of Mr. Muchmore.

Hollis Martin, a son of the late O. E. Martin, founder of paper mills at Norfolk and Raymondville, N. Y. which are now owned by the Hanna Paper Corporation, is reported to be active in the promotion of a new paper plant to be built during the coming summer at a point on the Racquette River about two miles from Norwood below Potsdam. Contracts for the erection of the mill have already been let. Light weight papers will be the principal product. The capacity of the new mill be about twelve tons a day, it is said, and power for operations will be taken from the Racquette at a site owned by those interested in the project. A ground wood mill with a 25 ton capacity is already being built near the site of the proposed mill.

Secretary Wallace of the Department of Agriculture expects soon to sign contracts with a number of concerns for the purchase of pulpwood from Alaska National Forests and for the authorization of water power sites through the Federal Power Commission for the purpose of manufacturing both pulpwood and paper. On the Tongass National Forest, it is estimated, there is a source of supply of timber which can furnish perpetually an annual yield of print paper equal to one-third of the total national consumption of the United States. The industry, when established, will be upon a permanent basis, with raw material at reasonable prices. The merchantable timber on that forest includes at least 100,000,000 cords of Western hemlock and Sitka spruce.

SIXTY STUDENTS IN WISCONSIN COURSE

Madison, Wis., Jan. 28—Sixty students are enrolled in the extension courses in pulp making being conducted by the Forest Products laboratory in cooperation with the extension division of the University of Wisconsin.

Thirty-nine are members of a study class organized in the three Wisconsin cities, Nekooss, Port Edwards and Wisconsin Rapids. The class meets weekly and discusses the current assignment under the direction of a representative of the university. The written work is completed by the men after the class hour and papers are forwarded to the extension division. They are graded by members of the laboratory staff.

Ten of the remaining 21 enrolled are residents of Wisconsin. Three live in New York state, two in Illinois, two in Minnesota and one each in Ohio, Indian, California and Maryland.

The occupations of the students as indicated on the enrollment blanks follow:

Six executives (including one assistant manager and five superintendents,) four foremen, one chemist, one draftsman, 13 machine tenders and helpers, seven cooks, four truckers and roll pluggers, two oilers, three plant engineers, two clerks, four salesmen, one editor and 12 unclassified.

TIMBER LIMIT AWARD

Toronto, Feb. 2.—The Hope Lumber Company of Thessalon, has been awarded the right to cut the red and white pine on the limit made up of the southern portion of the township of Westbrook and a part of the adjoining township to the south, an area altogether of 25 square miles on the following terms: $13.27 bonus per thousand feet board measure in addition to the Crown dues of $2.50 per thousand feet. It was announced this morning by the Ontario Department of Lands and Forests.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, February 5. — Taking the market as a whole, conditions in the local paper trade are favorable. Buying is good, with the orders placed with jobbers on a larger scale than has lately been the rate. Prices, too, are ruling firm, the inclination being upwards if anything, owing to the increase in manufacturing costs. There are indications that general business is slightly improving, and the paper trade should be among the first to feel the effects of this broadening of commerce.

The demand for newsprint is as great as ever. The following figures are interesting as showing the increase in production. Canada last year producing the largest tonnage on record, so far as this country is concerned, and Canadian production more than made up the total increase over all previous records; the U. S. production was 64,000 tons less than the 1920 record.

	Canada	U. S. A.	Total (tons)
1922	1,086,551	1,447,688	2,534,239
1921	812,787	1,225,235	2,037,922
1920	883,215	1,511,958	2,395,183
1919	769,802	1,374,517	2,144,319

According to figures compiled by the Canadian Pulp and Paper Association, the total consumption, as near as can be estimated, was just over 2,500,000 tons. This compares with a consumption of 2,138,000 tons in 1921 and 2,208,000 tons in 1920, so that 1922 shows an increased consumption of 17 per cent over 1921 and of 13.5 per cent over 1920. The stocks of publishers reporting to the Federal Trade Commission decreased during the year by 3,176 tons and stocks at the mills decreased by 11,000 tons. In addition to the above domestic consumption Canada exported 72,000 tons to overseas countries compared with exports of 55,000 tons in 1921. European imports into the U. S. A. amounted to 84,111 tons for the first nine months of the year and will probably total about 110,000 tons for the year when the complete returns are available. United States exports of newsprint amounted to about 25,000 tons for the year which was larger than in 1921 but considerably below 1920 and 85,000 tons less than in 1919.

In other lines, boards have advanced from $10 to $15 per ton. The cost of production has gone up and manufacturers feel that the consumers should bear at any rate a part of the burden. Notwithstanding this advance, orders are coming in freely. The discount to jobbers on tissues has been reduced by 2½ per cent. The request for bonds, writings and ledgers is moderate with prices on the same level, but it is noted that an increase is announced in the U. S. Wrappings are being well bought.

The pulp section shows little change. A factor which should make for stronger conditions is a lock-out at the Swedish pulp mills, which commenced on January 29. The employers desired a reduction of 20% in wages, while the men asked for an advance of a smilar amount. The dispute went to arbitration, which proved futile, the lock-out following the failure to agree. Bleached sulphite is in steady request, while groundwood is still on the weak side as compared with recent values.

The price paid by the Ontario Pulp and Paper Company for the Quebec Government limits of 2,000 square miles in the basin of the Manicougan River and the Outarder River is significant of the rising value of pulpwood limits. The Company will pay a stumpage rate of $6.05 per 1000 feet, or $3.35 over the usual rate, an overcharge which is calculated at $1,500 per square mile. It is getting more important each year to secure a certain source of supply of pulpwood, having regard to the increasing output of newsprint, and companies are apparently willing to pay good prices in order to ensure that supply.

Ontario Market News

Business in the paper line during January, was good and Toronto jobbers report that trade has opened up auspiciously when the whole month is considered. The turnover in flat papers was larger in volume than a year ago and some dealers report an advance of as high as ten per cent. in cash receipts, although prices on general lines average about ten per cent. below these which prevailed twelve months ago.

There are signs that prices are advancing as some Toronto concerns have received word of strengthening Values on cover, manifolding and other lines in the United States. Mills are running to capacity in book, writing, bond and ledger papers.

Manufacturing stationers and envelope producers are also witnessing an added volume of business. The toilet and tissue mills report that demand is steady and the outlook good. The market for waste papers during the past few days showed a little weakness but this is thought to be seasonal. In domestic rags, the requisitions for new cotton cuttings are good and prices are soaring proportionately. The mills seem busy, dealers report and inquiries from the United States are keeping stocks of rags rather low in Toronto.

There appears to be a general impression in the trade that, along about the end of the month, the book and writing mills will jump prices ten per cent., bringing up the figure to what it was a year ago. Producers have now revised their costs for the coming year and find that they are growing, owing to higher prices for raw materials including ground wood pulp, coal, waste, etc. The only revision downwards has been in kraft which, on sales to small jobbers, has been decreased half a cent in any desired quantity.

Paper box manufacturers are getting busier and, owing to increased cost of production and supplies, producers of board have raised their product ten dollars a ton all around. Plain chip board is now $75 per ton, delivered; straw board $75; white vat lined board $85; filled wood board $90; folding board $100; white patent coated, news back $120; white patent coated, manila back $130. These prices are subject to change at any time without notice.

There has been a slight weakening in ground wood prices owing to a falling off in demand. The call for other lines of pulp keeps up fairly well, Sulphate is having a moderate market and is quoted at seventy dollars at the mill. Prices of pulp wood are tending toward an advance and a very large quantity is being taken out in Northern Ontario and heavy shipments are being made to the mills in the province and the Middle western states.

NEW YORK PAPER MILLS LEAD NATION

New York State still leads the nation in the production of paper and pulp, despite the fact that the depletion of the nation's supply of pulp wood timber is sending the paper mills farther and farther afield in their search for the raw material which is the mainstay of this industry.

The American Paper and Pulp Association, however, in reviewing the census figures just made public, calls attention to the additional fact that the paper mills of this state are leading the nation in the practice of forestry, by the care of their lands, as well as in actual reforestation activities, thus affording the hope that the State's mills may be able to maintain themselves indefinitely.

The census figures for 1919, which have not been materially changed during the intervening years by the gain or loss of establishments, show there are 156 pulp and paper mills in the state, of which 81 made paper only, 56 produced both paper and pulp and 19 produced pulp only. In value of product, New York has led the nantion in the last three censuses, its product in 1919 being valued at $129,381,032, or 16 percent of the entire paper manufactured in the United States.

The state has 292 paper machines, with an annual capacity of 1,499,125 tons and newsprint leads the list in both tonnage and value of the product. The value of the newsprint for 1919 was nearly $36,000,000, of wrapping paper $15,000,000 and boards $15,500,000.

Wood pulp made for sale was valued at $14,600,000.

The mills of the state purchased $20,000,000 worth of pulpwood during the year, and nearly $5,000,000 was paid for waste paper to be reworked, as a means of conservation of the state's timber supply.

The importance of the tissue paper industry is shown by the fact that the state produced 10 percent of the total consumption of the nation.

NEW YORK MARKETS

New York, February 3. — (Special Correspondence) — Increasing trade activity and strength in prices are the outstanding features of the paper market in New York. Demand for paper of nearly every kind is steadily on the rise. Consumers — large and small — are absorbing supplies in a very consistent manner and are buying in a volume which in times prior to the war would undoubtedly have been regarded as approaching a boom in the market, but which today with the productiv efacilities of the paper mills of the country so greatly enlarged is considered merely as a very lively market condition.

The trend of prices continues upward. The most important development of the week is the advance of one to two cents per pound in fine papers. Representative manufacturers have announced an increase in prices of all bonds, ledgers and linens selling at 20 cents a pound or higher of 2 cents per pound, and of all fine papers selling at below 20 cents of one cent per pound; This advance was not unexpected; in fact, most members of the trade had been looking for it. The steady climb of raw material costs in recent weeks, especially of new cotton rags which are used in the manufacture of high grade papers, led the trade to anticipate a rise in paper prices, and the advance created no stir in the market.

Prices of box board have strengthened further. Mills in the East have increased quotations on plain chip board to $75 a ton f.o.b. New York in most cases, and it is stated that only regular customers can now secure chip board at less than this prices, some few sales down to $72.50 having been reported. Quotations on news board are up to $80 a ton New York, while blinder board prices have been advanced to between $90 and $95 a ton. The rise in board prices is also due to high cost of raw material, coupled of course with a very good demand for boards. Box manufacturers are purchasing board in large amounts and it is stated that mills are far behind in deliveries, having been hampered in their operations by difficulties in getting all the old waste paper required both because of a partial shortage of this commodity and unfavorable weather which has delayed shipments.

Newsprint continues firm and is moving toward publishers is good tonnage. Newspapers in this city and elsewhere throughout the States are printing large issues, and latest figures show that circulation is gaining, which means consumption of print paper is holding up on a high level and in most quarters is mounting. There are many in the trade who look for higher prices on newsprint in 1923. They contend that with consumption where it is and with every factor presumably in favor of continued heavy consumption all of this year, manufacturers will feel warranted in boosting prices later on. Manufacturers, on the other hand, appear opposed to make any predictions regarding the trend of prices and seem desirous of maintaining market levels on a stable basis rather than endangering the demand by raising prices.

There is a steady call for book papers, and the casein situation is making for extreme firmness in coated paper. It is said that practically no spot supply of casein is available at any price, and it is admitted that paper manufacturers haven't their potential requirements for the next several months covered. Coated book paper is quoted at from 9.50 cents per pound upward f.o.b. New York, and buyers invariably find it necessary to grant premiums to get quick deliveries.

Coarse papers are quotably firm and are moving in good amounts, with No. 1 domestic kraft wrapping quoted at from 7 cents a pound upward f.o.b. New York. Tissues are quoted at around a basic level of 95 cents per ream for No. 1 white tissue.

The Federal Trade Commission's report on the paper industry for December shows that production of paper declined considerable during that month compared with the several previous months. A total of 607,241 net tons of paper and board of all kinds was produced by United States mills in December, contrasted with 641.544 tons in November and 644,267 tons in October of last year, 508,284 tons in December, 1921; 445,539 tons in December, 1920; 569,392 tons in December, 1919; 435,779 tons in December, 1918, and an average monthly output based on reports covering the past five years of 504,175 tons. The decrease in production in December doubtless was due to the holidays in that month as well as to many mills closing down for repairs and inventory toward the close of the year.

Mill stocks of paper increased somewhat during December. At the outset of that month stocks amounted to 238.191 net tons of all grades, while at one end of December mill holdings totaled 258,000 tons, equalling approximately 13 days' average ouptut of all the mills.

GROUND WOOD. — A firm tone prevails in ground wood and there is a ready demand for virtually all the supply producers are placing on the market. Newsprint and board mills are absorbing pulp in a steady way and are frequently looking to augment their stocks, whereas producers haven't much ground wood on hand unsold and are mostly conserving supplies for their own use. About $45 to $46 a ton f.o.b. grinding plants is still regarded as the market value of spruce ground wood for prompt shipment. Cases are cited now and then of sales at higher prices, but $45 is declared to be still representative of the market level.

The Federal Trade Commission's report shows that mill stocks of ground wood continued to decline in December, and at the end of that month totaled but 66,393 net tons, against 80,212 tons at the beginning of December. Production in December amounted to 107,301 net tons, compared with 120,143 tons in the preceding month.

CHEMICAL PULP. — News that the lockout of pulp mill workers in Sweden had been put in effect last Monday has served to strengthen sentiment in pulp trade circles here to no little extent. Sellers seem less desirous to dispose of stocks, and offering has consequently decreased, and while no further change of note has developed in prices, there is a much firmer undertone in evidence. It is readily appreciated that the situation which has developed in Sweden should have no immediate influence of importance on the American market, but the mere possibility that this country will not be able to get usual supplies of Swedish pulp when navigation opens up in the spring is sufficient to buoy up the feeling among pulp men and to prompt them to take a stronger view regarding unsold stocks on hand. At the same time, paper manufacturers are having no trouble in getting all the pulp desired, and in frequent instances they are acquiring sulphite and kraft at price concessions, one of the chief reasons for this being that pulp arrivals from abroad at American ports have been so large in recent weeks that dock and railroad facilities at seaports are congested and railroads have increased rates on pulp stored in transit to such an extent that importers are trying to dispose of pulp as quickly as it is landed.

Members of the trade here expect the lockout in Sweden to be maintained for some time. It is pointed out that Swedish manufacturers are short of wood owing to a strike in the woods, and that rather than chance a wood shortage in the spring when export shipments can be effected, they will choose to keep their mills closed for a time now and thereby conserve their wood supplies. Whatever the developments are in Sweden, it is felt that the influence on the American market cannot be other than bullish in due time.

RAGS. — Most grades of papermaking rags are moving in good amounts and at a steady pace. Prices are firm and there is a tendency in many grades to advance despite prevailing high levels. Roofing stock has sold this week at 1.45 cents a pound f.o.b. New York for No. 1 packing and 1.35 cents for No. 2 grade, and in some exceptional cases mills have paid a dollar or two a ton above these figures. New cuttings are firmly held and dealers do not hesitate to name advanced prices, especially on bleached cuttings which are in extra good demand. Old whites are quoted at 6 to 6.50 cents per pound for No. 1 repacked, and 3.75 to 4 cents for No. 2 repacked f.o.b. shipping points, while repacked thirds and blues are priced at around 2.25 cents a pound at dealers' points.

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AND

Finnish Wood Pulp Union
Helsingfors, Finland

PAPER STOCK. — The market for waste paper has displayed a more stable tone this week and prices have held steady with few changes of importance. Some purchases of low grades at slight recessions have been reported but as a general thing board mills find it necessary to pay firm prices for tonnage lots, quotations ranging around 1.60 cents a pound f.o.b. New York for folded newspapers and 1.30 cents for No. 1 mixed papers. Shavings hold steady at 4.25 cents upwards f.o.b. New York for No.1 hard white, and at about 3.75 cents for No. 1 soft white shavings, while old flat magazines are bringing 2.65 cents freely at shipping points. No. 1 manilas are quoted at 1.90 to 2 cents per pound, and old kraft paper is selling at 2.50 cents a pound.

OLD ROPE AND BAGGING. — A firm tone marks prices of old manila rope and paper manufacturers readily grant between 6.25 and 6.50 cents per pound at dealers' shipping points for domestic manila rope, while foreign rope is selling at about a quarter of a cent per pound cheaper. Jute and wool strings are quoted at around 1.35 cents a pound New York, and sisal strings at about 1.50 cents, with mixed strings held at 90 cents to $1 a hundred pounds. Old bagging is featured by a better call for supplies from roofing paper mills, which are offering 90 to 95 cents a hundred pounds New York. No. 1 scrap baggings is quoted at 1.10 to 1.15 cents a pound at shipping points by dealers.

With the Woodsmen

MR. PICHE ON FOREST POLICY

M. G. Piché, chief forester of the Province of Quebec, in a paper on the position of forestry in the province, read before a conference of the Quebec Forest Protective Association, on January 23, at the Mount Royal Hotel, Montreal, described the various adverse and hopeful conditions in the situation. He also alluded to recent developments and continued:

To determine the reasons why these various operations and many others should be done and what profit will be realised by them, the Government has decided to create a research bureau, we have seen with pleasure that the pulp and paper makers on their side are considering appointment of a forester to investigate some of these questions. The Government will be very glad to co-operate with all those who are interested in research work because the quicker we can find the solution of these problems, the better it will be for everyone. But there is a danger which must be avoided: the investigators must not generalize too quickly and too much on the results of their investigations as forest studies require continuous efforts which must be carried on, not only during several years but in various sections of the Province, and over large areas; therefore such research work will require considerable time, a large expenditure of money, unity of direction, so that results may be compared—and above all the employment of well paid men, who must be qualified, devoted and patient. As the pulp and paper industry means much for the Province of Quebec on account of its importance, of its permanent character, of the closest utilization it makes of forest production, and of the great prosperity it has brought to the towns and the surroundings where the mills have been erected, the Government could not remain indifferent to their development, and it has been decided to organize a full teaching of paper making in the Province. In the past we have been compelled to go outside the Province and this country for men to act as mill superintendents, foremen and even machine tenders, but we hope that the citizens of this Province will have the right to work not only as labormen in these mills but also to occupy the higher positions, and we hope further that the directors of the pulp and paper companies have not forgotten the call which Sir Lomer Gouin made to them in favour of his compatriots. Our forests far from being unexhaustible, have suffered heavily from the attacks of all kinds of enemies, and we must find means to protect them against fires, insects, fungi, and windfalls. We must handle what remains of our forest wealth in a rational manner, that is we must cut on our forest holdings not more than the annual growth, and any mill that has not a sufficient supply must buy enough wood from private owners to make up for this deficiency instead of letting it go to his American competitors. In fact, we must stop the exportation of wood, as our supply does not allow us to do it any more.

Mr. G. C. Piché, M. F.

"TIMBER LANDS AND WATER POWERS OF QUEBEC"

Newman, Sweezey & Co., of Montreal, the well-known firm of investment bankers, who recently marketed the new issue of the Belgo Paper Co., have just issued a 30-page brochure by R. O. Sweezey on the timberlands and water powers of Quebec in relation to the Pulp and Paper Industry. A more complete review, with excerpts will be published later, but anyone interested should have a copy, which will be sent on request by Newman, Sweezey & Co., 136 St. James St., Montreal. The preparation of the book clearly reflects Mr. Sweezey's wide knowledge of our natural resources and his meticulous care in getting things straight.

One thing that made so good the bread that mother used to make was the appetite the boy had.

NEW BRUNSWICK FOREST EXPORTS

Comparative statement of exports to the United States invoiced through the American Consulate at Campbellton, N.B. and the Agencies at Bathurst, N.B. and Gaspé, Quebec during the Calendar years ending December 31, 1921 and 1922. The Campbellton Consular District comprises the Counties of Restigouche and Gloucester, New Brunswick and the Gaspé Peninsula, Quebec.

Article	Unit of Qnty	1921 Qnty.	1921 Value	1922 Qnty.	1922 Value
WOOD & PRODUCTS.			($3,230,247)		($5,312,163)
Lath	M	96,205	530,871	176,204	1,000,686
Lumber:					
Cedar	M	35	1,487	23	1,325
Hemlock	M		. . .	105	2,712
Miscellaneous	M	2	92	243	5,751
Pine	M	1,790	64,110	2,499	79,226
Spruce	M	44,599	1,331,054	86,679	1,734,652
Miscellaneous	pcs	868	723	. . . .	. . . . .
Piles & Poles	pcs	13,711	62,967	6,861	37,400
Pulpwood	cds	14,223	224,813	41,093	615,094
Shingles	M	65,325	293,723	83,156	654,907
Ties, railroad	pcs	35,903	36,140	3,134	2,580
Trees, Xmas	bdl	5,695	1,665	12,681	5,994
Woodpulp	lbs	22,327,616	682,612	44,716,000	1,171,836
TOTAL EXPORTS:			$3,873,594		$5,961,648

GOOD BOOKS FOR FORESTERS

The Timber Merchants's Handbook. By Frank Tiffany. London: William Rider & Son, Ltd. 5s. net.

The first nine chapters of this book deal with the measures of timbers. In almost every trade there are confusing varieties of measures: for instance, a quarter of linseed from India, if Bombay shipped, is 416 lb.; if Calcutta shipped, is 410 lb.; if bought in Mark Lane, it is 496 lb., but if bought in cargo it is 492 lb. Wheat, again, is sold in Cambridge by the coomb, in Newcastle by the boll, in Doncaster by the load. Plums are sold in Worcestershire by the "pot" of 72lb., in Middlesex and Kent by the half bushel, which is sometimes 28 lb. and sometimes 24 lb. In the case of apples one is supposed to get 40 lb. to the bushel, but with some kinds one gets more and with others less. One might multiply instances **ad nauseam**, but surely nowhere are the measures more confusing than in the timber trade. In softwoods we have the Petrograd Standard, which equals 165 cubic ft.; the Wyburg Standard of 180 cubic ft.; the Drontheim Standard of 198 cubic ft.; the Christiania Standard of 103⅛ cubic ft.; the Drammen Standard of 121⅞ cubic ft.; the London and Irish Standards of 270 cubic ft.; the Quebec Standard of 229 1/6 cubic ft.; the Riga Last of 80 cubic ft. Similar complications run through all the timber measures, and the novice will find in Mr. Tiffany's handbook a valuable clue to guide him through the labyrinth which without it must at first seem absolutely paralysing.

Part II. deals with the various kinds of woods; and here the author puts in a plea for precision of nomenclature. There is almost as great confusion in this respect as in the various systems of measures, and Mr. Tiffany refers to a Professor of Botany who includes as "Mahogany" the following woods: African Walnut, African Cedar, **Pterocarpus indicus**, Red Serayah, Camphor Wood, Teak and Sabicu. It is greatly to be regretted that the trade has not yet been able to secure greater precision in the nomenclature of timbers.

The handbook is full of information, and should prove useful to all engaged in the timber industry and its allied trades. — J. Roy. Soc. Arts, Mar. 5, 1920.

A Map of the World (On Mercator's Projection) having special reference to forest regions and the geographical distribution of timber trees.

A Map of North America (On Mercator's Projection) having special reference to the principal forest regions and the chief timber trees.

A Map of South America, Central America and the West Indies (On Mercator's Projection) having special reference to the principal forest regions and the chief timber trees.

A Map of Europe and Africa (On Mercator's projection) having special reference to forest areas and the distribution of the principal timber trees.

Four wall maps, each 37.5 by 29 in., mounted on canvas and roller and varnished. Prepared by J. Hudson Davies. (Edinburgh; W. and A. K. Johnston, Ltd.) Price 8s. 6d. each.

These are four well conceived and excellently executed specimens of cartography. The coloring on the main maps of all four sheets is uniform and is confined to the now familiar five tints of yellow, brown and greens representing tundra and snow, dessert, grass-land, and prairie, well wooded regions in which 20 to 40% of the surface is occupied by woodland, and densely wooded areas with more than 40% so occupied. The maps are not overcrowded with place names, those marked being chiefly ports from which timber is shipped. In the world map the names of the leading timbers of commerce appear in clear black capitals. Every corner available has been filled with useful inset maps. The map of North America has 12 small inset maps showing the areas of 20 leading species, with notes as to those of a dozen others. — Bull. Imp. Inst., Apr. - June, 1920.

SPANISH RIVER BUYS LIMITS

Toronto, Feb. 1.—The timber on Hawkins Township, 81 square miles, has been sold by the Department of Lands and Forests to the Algoma Central Railway and the Spanish River Pulp and Paper Mills, Limited, jointly, on the following terms: Jack pine, $3. a thousand; ties, 10 cents each; spruce pulpwood, 80 cents a cord; other pulpwood, 40 cents.

Milligan and Morrow, Winnipeg, were awarded ten square miles of timber near Sunstrum on the Transcontinental, at the following rates: Red and white pine, $10.60 a thousand; jack pine, $8.50; spruce, poplar and basswood, $6.75 a thousand; other timber, $4.75; ties, 14 cents; spruce pulpwood, $120 a cord; other pulpwood 35 cents per cord.

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They extend a very cordial invitation to any of their friends in the pulp and paper industry who are in the vicinity of Boston to visit their Plant at any time, and see for themselves the care that is taken in the manufacture of high-grade knives and the facilities the John W. Bolten and Sons Inc., have for serving to the industry.

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Paper Machine Operation
Sulphate and Soda Pulp
Complete Paper Course
Complete Course in Pulp and Paper Making

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI GARDENVALE, Que., February 15, 1923 No. 7

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:-: EDITORIAL :-:

MENTAL "SLOPPINESS"

Most of us, if we find our bodies getting out of condition, are apt to get greatly perturbed over the fact. We will take to golf, or go in for a course of physical culture, or resort to a scientific dietary, or what not. For we realize that our bodies are complicated pieces of mechanism, but that, while liable to get sadly out of order, they are, fortunately, amenable to proper treatment, in a large number of cases, at any rate.

But what about our minds? The mind is a more complicated affair than the body. It is liable to get not less badly out of order. Yet, happily, it is, perhaps, even more amenable to proper treatment. But to how many of us does it ever occur that our minds can get out of condition and require to be put in order? And yet the mind has its own organs just as much as the body—its invisible muscles and arteries and so forth. Some of these organs may be atrophied some starved, some out of shape, and so on. And a large proportion of those thus suffering are doing nothing to put their minds in order. They are the victims of chronic mental "sloppiness" — that is to say, they possess minds which are not doing the work that minds are capable of doing.

Some are conscious of this mental "sloppiness." Others suffer from it, but are unconscious of it. They may see the effect of it in their work, but they are ignorant of the cause. Yet the signs of the latter should be plain for all to read.

First, there is procrastination — the putting off until tomorrow what ought to be done today. This is a matter with regard to which it is very easy to deceive ourselves. The distasteful job is one that will be better done for waiting, we may argue. Or we require time for consideration before we can tackle it adequately. Or we are "too busy" to attend to it now. And so on *ad infinitum*. But, whatever the reason — or rather the excuse — that we assign to ourselves for our procrastination, the result is the same. The distasteful work is side-tracked, the easy work is given attention.

Then there is loss of interest in our work. Almost invariably — except in cases where the job is palpably too big for the man — this signifies lack of effort. For it is a difficult thing to lose one's interest in a job at which one is working with all his might and main. The man who is master of his work does not lose interest in it. But the man who has let his work master him is almost sure to do so.

Then there is want of "stickatitiveness" — the desire to change one's work. It is only by sticking at the work that we are doing, that we outgrow it — grow big enough for the larger responsibilities that larger work entails. "Distant fields look green," but the man who is always hankering after "pastures new" — who says in his heart that his work is all drudgery, while the other fellow's is colorful, interesting and free from grind—is mentally "sloppy."

Indeed, procrastination, loss of interest in our work, and hankering after change of work all are due to mental "sloppiness" and inefficiency.

There is one sure cure for mental "sloppiness"—concentration. Let the procrastinator, instead of giving the distasteful job the "go-by", go to it. Let the man who finds he is losing interest in his job ask himself whether he is doing his work to the limit of his ability; let him give an honest answer to the question, and then realize that we cannot get happiness out of our daily job, whatever it may be, without paying the price of the best work that is in us, and act accordingly. Let the man who desires change of work take to heart the lesson that it is only when he himself has ceased to grow that his opportunities look limited.

The late Mr. Chamberlain — than whom no man worked harder or more quickly — used to say that if he surpassed other men in any quality at all, it was in his power of concentration. And this faculty of concentration can be acquired and cultivated. Of course, it needs will-power — the will not only to begin, but to continue, to concentrate. But the more we will ourselves to concentrate, the easier it becomes to do so. An enormous percentage of us are, whether consciously or not, mentally "sloppy". Nearly all of us can cure ourselves of that defect if we will. But the remedy is within us.

Incidentally, it may be mentioned that one of the most effective aids to concentration at will is to be found in memorizing. That, indeed, is one of the best kinds of calisthenics for the mind. There are few mental exercises better than learning great prose or poetry by heart. Ten lines a day for two months —there is a concrete remedy for mental debility. For the chief, but not the only, merit of learning by heart as an exercise is that it compels the mind to concentrate.

CONFERENCE ON INDUSTRIAL RESEARCH

There is now in Canada a substantial and widespread interest in research. Up to the present, however, this interest has remained, in the main, unorganized and therefore ineffective. It was in an effort to consolidate this general interest by providing a definite objective and a means for its practical application that the Advisory Research Council at Ottawa proposed the establishing of a National Research Institute three years ago. Their attempt failed. No alternative solution has been provided, nor has any effective alternative been even suggested.

Meantime we are losing, every year and every month, the advantage conferred by a national institution to which each and every Canadian with an industrial problem to solve can come for advice, aid, and cooperation. It is true that the existing organizations for research, notably those in our universities, are able and willing to aid industrial research in every way possible; but their limitations, which are obvious and have been the subject of much public discussion, prevent them from fulfilling the functions of a national institution. The fact that the universities, some of which were at first strongly opposed to the founding of a central institute for industrial research, are now uniformly in favour of it demonstrates their own realization of the need.

There is now renewed hope that the issue may be brought to a practical conclusion. Canadian manufacturers and boards of trade have, during the past three years, shown a surprising unanimity in favour of industrial research organized on comprehensive natonal lines. They lent their support, individually, to the Advisory Research Council's last attempt to found a National Research Institute, but it was not enough to ensure success. Now it seems that they are ready collectively to support the cause, and we can hope for a more fortunate result.

The Canadian Manufacturers' Association has arranged for a conference in Ottawa on February 20, 21 and 22 next, to which have been invited representatives of our universities. The Advisory Research Council will be represented; but (be it noted) the meeting has been arranged by the representatives of industry.

The leaders in Canadian industry have, during recent years, given indubitable evidence of their interest in industrial research. In many cases, unfortunately, this interest has not been crystallized in action, mainly for lack of a compelling opportunity. We are confident that now they have tackled the problem officially, through their Association, they will find a solution — a safe, sound and sane solution — and will put it promptly into effect.

Readers of the Pulp and Paper Magazine will be glad to learn that Mr. E. A. [illegible], manager of the Abitibi Paper Mill is very much improved in health.

COBWEBS

Our hearty congratulations and best wishes to the brides and bride-grooms.

The death of Dr. Roentgen just this week, brings to mind another fine instance of public spirit and of individual contribution to the welfare of mankind. Dr. Roentgen was the discoverer of the X ray, but refused to take advantage of the opportunity for personal aggrandizement which was offered in the commercial exploitation of his remarkable discovery. He simply replied, "What I have found belongs to the universe."

On another page, announcement is made of the Prize Essay competition for which Mr. Frank J. D. Barnjum has offered substantial prizes. Mr. Barnjum is one of the many foresters and exploiters of the forest, who realizes that something must be done for their conservation, and is one of the few who has the willingness and the nerve to do something. Mr. Barnjum has been studying the situation for years and has become increasingly convinced of the need for drastic and immediate action. After giving the matter due consideration, it is his opinion that further export restrictions are required, and he advocates a very stiff export duty or, what he considers preferable, an absolute embargo on unmanufactured wood going out of Canada. Mr. Barnjum is certainly doing a great public service in keeping the matter before Canadian people and he is having the satisfaction of seeing some reaction on the part of the public to the necessity for definite action toward conservation of our forest resources.

His plea for an embargo is, strangely enough, supported by remarks from some of the leading foresters of the United States who have expressed themselves as expecting that Canada will, of necessity, take some such action as Mr. Barnjum advocates in order to protect the wood using industries of the Dominion

"SAFETY FIRST"

See your way clearly—
Ask if you don't understand—
Fix a dangerous spot—
Enlighten the new workman—
Think before you act—
You can do it—

First say to yourself—
"I am going to play safe"
Remember to **THINK**—
Safety all the time
That's the way it's done.

LUMBER EXPORTS FROM B. C.

Lumber exports from the Province of British Columbia will total 260,000,000 feet for 1922, according to Inspection Bureau estimates. Tonnage totals for the port for the past year will exceed 1,000,000 gross tons, divided among 720 deep-sea ships. Customs and excise receipts for the year approximate over $15,000,000, nearly $4,000,000 more than 1921.

The Colloid Chemistry of Paper Sizing[*]

By Dr. RUDOLPH LORENZ

(From an Address Delivered before the Society of
Pulp and Paper Chemists and Engineers
in Berlin, December 16, 1922.)

More than ten years ago, when there was little discussion of colloid chemistry, Klemm made the remark that the art of the paper maker would doubtless some time be advanced by the application of colloid chemistry. In the meantime, colloid chemistry has been developed to an independent branch of physico-chemical research, and, in spite of its youth, has already yielded much fruit in the different domains of its application, in medicine as well as in natural science and technology.

During the last few years, you will find published very little colloid chemistry concerning the organic fiber colloids, which are extremely difficult to handle. With the colloid chemistry of sizing, it is somewhat different. For twelve years Schwalbe has asserted that all substances, suitable for the sizing of paper, "are typical colloids which keep their colloidal condition indefinitely."

"Colloidal state" or "colloidal degree of dispersion" means that the individual particles of substances are in such a state of division that they are of the order of size $\frac{1}{10000}$ to $\frac{1}{1000000}$ mm.

This colloid division is now found in all kinds of sizes for paper: rosin size, glue size, glutin, mucilages, rubber, gum arabic, and also montan wax, viscose, casein, albumin, starch, dextrin, rubber latex, and the mineral sizes, as gelatinous silicic acid and aluminum hydroxide. All these substances in the colloidal state develop, because of this high dispersion, an enormous surface. This condition, however, is essential for sizing: the substance must manifest a sufficiently large surface to surround all the fibers, thus waterproofing and protecting them from the penetration of inks and colors. Concerning this point, Klemm's researches on the fusion of precipitated rosin in paper concluded that by drying the precipitated rosin on the drying cylinders of the paper machine there resulted thin dried films of an immense waterproofing surface.

Several experimental articles on the colloid chemistry of rosin precipitation in the beater have appeared: one by F. Stockigt and A. Klinger in the Festheft of the "Papier-Fabrikant," 1921 and another by R. Sieber in "Zellstoff und Papier", 1921 and 1922. (The latter article, translated, appeared in the "Paper Trade Journal" for Oct. 12, 19 ,26 and Nov. 16, 1922. — Trans.) Independent of these people, I have studied the colloid chemistry of rosin sizing as a pure colloid chemist, in the laboratory of Wo. Ostwald, Leipzig. My studies have led to results which these investigators have partly confirmed and supplemented.

In practice, about one-half the equivalent of alkali is heated with the rosin, so that the other half of the rosin acid remains unsaponified and is suspended in the colloidal state as "free rosin." This gives to the solution its well-known milky appearance. The saponified half of the rosin, originally of molecular dimensions, very soon assumes in the beater the size of colloidal particles and increases by about one hundred times. Then, on account of the great dilution by the beater water, complete hydrolysis of the rosin soap solution occurs and the insoluble free rosin acid, formed by the hydrolysis, condenses to colloidal particles. This dispersion reaction, combined with hydration phenomena, I can follow by using a stalagmometer (by measuring the liquidity of such a solution).

What happens, now, if aluminum sulfate is added to this colloidal dispersion of rosin in the beater?

Chemical reactions, such as the formation of aluminum resinate, can not come into consideration under the conditions. Salt formation, by double decomposition, takes place between ions and molecules; but, as we have seen, resinate ions and rosin acid are not present in large amounts at all in the beater; instead, we have their colloidal aggregates, which are over one hundred times as large as the rosin acid molecules and ions. We may suppose that on the surface of a relatively large rosin particle, resinates are formed by double decomposition with the Al ions, which, according to Wurster, are broken down again by the excess of aluminum sulfate added. Nevertheless most of the rosin, which is inside of the colloidal rosin particles, is inaccessible to the resinate formation.

The chief effect of aluminum sulfate is not purely chemical, but colloidal, that is relating to dispersion chemistry. It acts as a flocculation agent, it causes an agglomeration of the colloidal rosin particles, it condenses the fine rosin suspensoid to flocks, it coagulates the rosin hydrosol.

If the rosin particles are left in the beater in the colloidal state, a large part of the rosin may be contained in the back-water and thus the formation of a continuous fused film on the paper is not likely to occur.

Quantitative experiments on the coagulation of colloidal rosin solutions with aluminum sulfate solution have shown that the trivalent Al ion in aluminum sulfate has about 5000 times the precipitating power compared to the monovalent sodium ion in sodium chloride and 1700 times compared to the bivalent magnesium ion in magnesium sulfate. Often times sad experiences result with the use of mill waters which contain salts, in the natural state, in sufficient quantities to bring about an undesirable coagulation of the rosin suspension.

Different kinds of commercial sizes contain, besides rosin and alkali, other colloidal mixtures, as dextrin, gelatin, tannin, etc. By adding the proper amounts of one of these colloids, the precipitation process may be made to assume the desired course and may be kept at the optimum degree of dispersion. These admixtures act partly to assist the precipitation, partly to check it, partly to coagulate it and partly to peptise it, as so-called protective colloids. Slight changes in the working method often lead to opposite effects; for instance, casein, according to experimental conditions, can either render the rosin size nearly immune to electrolyte precipitation, or immediately effect precipitation. This interesting domain, for the application of the knowledge of colloid chemistry in the cooking of size, has been handled in the past only in a purely empirical manner.

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[*] Wochenblatt fur Papierfabrikation, Vol. 53, No. 52 (1922). Page 4542. Translated and Abstracted by John L. Parsons, Hammermill Paper Co., Erie, Pa.

The precipitating power of cations has been previously mentioned. Anions exert a peptising action which is the more pronounced, the greater the electric charge carried. The bivalent sulfate ion is more powerful than the monovalent chloride ion. With the cooking of size, a peptising action accompanies the saponification because of the hydroxyl ion of the alkali; in contrast to the free rosin it acts as a peptising or dispersing agent, it stabilizes the rosin suspension.

Upon precipitation with aluminum sulfate, the heavy electric charge on the Al ions* is not entirely advantageous for, at the same time, the stability of the colloidal rosin solution is reduced; the sulfuric caid formed by the hydrolysis of the aluminum sulfate neutralizes the alkali, hence the peptising agent is removed.

The following equations may further explain this reaction:

$$\begin{tikzcd}
Al_2(SO_4)_3 + 6H_2O \arrow[r, leftrightarrow] \arrow[d, shift left] & \underset{\text{colloid}}{2Al(OH)_3} + 3H_2SO_4 \arrow[d, shift left] & \\
2Al^{***} + 3SO_4'' \arrow[u, shift left] & \begin{array}{l} 3SO_4'' + \\ \hline 6Na^* + \end{array}\left|\begin{array}{c} 6H^* \\ \hline 6OH' \end{array}\right| \arrow[u, shift left] \arrow[r] & 6H_2O
\end{tikzcd}$$

(A positive charge is represented by *, a negative charge by '.)

By removing H^* ions from the system, according to the law of mass action, the hydrolysis of aluminum sulfate is increased and, at the same time, aluminum hydroxide is continually being formed, while the Al ions disappear. Since the back from the paper machine is practically aluminum-free, the hydrolysis must be very nearly complete. Moreover, when these Al ions are completely converted to aluminum hydroxide, their precipitating action, so essential and powerful, is ended. Hence it remains confined to the period before the termination of the hydrolysis.

All the aluminum is finally present as colloidal aluminum hydroxide. What effect does this colloid have on size? Does it play the part of a loading material for the paper and can it just as well be replaced by other mineral substances? Or, is it essential to the success of the sizing process?

Experience has shown that the exclusive use of an alumina-free precipitating agent, as magnesium sulfate, sodium sulfate, or dilute sulfuric acid, which on account of their precipitating properties might be suitable, does not produce permanent sizing. Such papers were more often slack-sized. This fact was the main support for the old resinate theory which, according to our belief, must fall quite out of consideration. On the basis of Wurster's free rosin theory, how can you explain slack sized paper, which has been sized without using aluminum sulfate?

Wurster helped himself from this dilemma by assuming that the aluminum hydroxide particles, deposited on the rosin, formed a kind of skeleton or structure, thereby preventing an agglomeration of larger flakes and providing a uniform distribution among the fibers. Schwalbe states that the aluminum hydroxide film exerts a protective action against the oxygen of the air, which otherwise would convert the rosin into "crystalline oxidation products, unfit for sizing" on account of their incomplete water-proofing of the paper, consequently leading to slack sizing.

Both ideas may be correct; but there is a third one to be added, why aluminum sulfate is needed with rosin sizing. As is known, cellulose in water already possesses a negative charge; colloidal rosin solution is also negatively charged. Therefore, it is to be expected that both constituents would be electrically repelled. Assuming that by the mechanical agitation of the stock in the beater the rosin and fibers become very intimately associated, and assuming that with a good subsequent fusion the fibrous net-work gets coated with a rosin film, free from microscopic cracks — after the paper has been stored for some time, an electrostatic repulsion of these negatively charged particles takes place, and a general loosening of the structure, the cellulose as well as the extremely thin rosin films, is the result. In this manner, the well-known cracks, into which the ink penetrates, occur.

On the other hand, if a positively charged colloid is added to the paper to approximately compensate for the negative charges on the rosin and pulp, the paper will be at the isoelectric point. Now, the positively charged aluminum hydroxide plays this part. Aluminum hydroxide holds together the rosin and pulp like an "electrostatic adhesive."

In conclusion, I shall tell you about a discovery which began with the above mentioned theoretical considerations and experimental results:

The previously cited work of F. Stockigt and A. Klinger of Prof. Heuser's laboratory concludes with these words: "If sizing with colloidal rosin can be carried out commercially, real economy would certainly result thereby. The problem of producing colloidal rosin in a mechanical way with a sufficiently high degree of dispersion is still unsolved."

This problem has now been solved through my efforts in Prof. Plauson's Research Institute in Hamburg. It is possible to size without a previous cooking of the size and without alkali, purely in a mechanical way. On account of present patent difficulties I unfortunately must refrain from giving further information relating to the process.

FORESTER GOVERNOR OF PENN. BUSY

Jobbers, not mill brands are recommended to Governor Pinchot of Penna. as the basis for state purchase of paper for state printing and binding, in a report just submitted on the subject.

As soon as he was nominated for Governor of Penna. on the Republican ticket last fall, Gov. Pinchot determined that the fiscal policy of the State and especially the spending policies of the various departments constituted the most vital matter to be planned and settled.

Accordingly he called together a Citizens' Committee which secured the advice of experts on housing, printing, accounting, procedure, public buildings, grounds, institutions and the like. In reports on present conditions, these experts recommended changes which they considered practicable to secure immediate results.

With leisure to consider and mature these plans before the appointment of the Governor's cabinet and State officials, there was no question of stepping on toes, or personal jealousies, and as the experts called in were entirely disinterested, it was for once possible to make the reports with only one consideration—the interests of the people of the State.

Know When To Leave A Job As Well As When To Take One*

By C. W. SUTTON, President American Vulcanized Fibre Co.

Eleven years ago I was working for a firm of Industrial engineers which had been retained to look into the affairs of a certain company. I was put on this job and worked on it for a year. Then I was asked to leave the engineering firm to become the company's secretary. With the consent of everybody concerned, I took the position. At this time I had had just two years' experience as an industrial engineer. Before that I had been simply a clerk. However, I found that a pretty varied experience had provided me with a fairly satisfactory equipment for my duties as secretary. I held the job a year; then I was elected general manager; two years later I was made president of the company.

Looking back, I think I have some reason to conclude that the best opening for a young man is not with the highly successful and prosperous company, for in such a company changes will be infrequent, as there is no occasion to "swap horses." The best openings are with the company whose affairs are not going any too well, for then changes are bound to come.

When I became connected with this company, some ten years ago, it had reached a dead stop and was turning back, after a considerable period of satisfactory development. We started out to stop that retreat, and we did stop it. A few years later we were going forward faster than ever.

Not long ago we paid off a bond issue of six hundred thousand dollars, although we could just as easily have extended the bonds. And the point I make is that the company which paid off that issue and refused money when nearly everybody else was asking for money is the **same** company which was going backward a few years ago—and it is managed by practically the same officers and workmen who were in charge then.

In other words, the affairs of this company were put on a sound and prosperous footing not by any "big idea" but simply by learning—when we were compelled by force of circumstances—to make better use of the materials, the good will, and the **brains** that we already had on hand.

Presently I am going to tell you what we did to get this business going forward again; but first I want to emphasize a few things that stand out in my experience above everything else. I am satisfied that the number of young men who fail to get ahead because they do not use the ability they have is far greater than the number of those who fail because they actually lack ability. Furthermore, if you will show me a man who is not putting into his job that real ability he has, then I will show you a man who, if he thinks about these things, is probably concentrating his attention on the **wrong** side of the **right** idea.

I have always heard a great deal about how to get a job and how to win advancement, but I have never heard much about how to **leave** a job.

I have heard at all times much talk about how important it is to have plenty of money to conduct a business, but very little about the danger of having more than enough money. Especially from young men—and I am one—I have heard a great deal about how old men block the game and keep young fellows from getting things done; but I have heard very little about how older men help the younger ones.

I believe that getting and keeping a better job depends a good deal on knowing how and when to leave the old one; that most people are better off by having less money than they think they need, for only then will they be forced to make the most of what they already have. Also I have found that the young man who can work with older men has a tremendous advantage over the man who cannot, and who thinks every man past fifty is an old fogy.

Take this matter of leaving a job. I was in a bank not long ago, and the president happened to ask me about a man he thought I knew. This man had applied for a line of credit.

"He seems to be a straight-forward, capable sort of fellow," said the president. "I liked him when he was in here, but he has not been in business very long. His financial statement isn't good and it isn't bad. It is just about average. If I thought he was a coming man, I'd like to get his account and I'd stretch a point on his financial statement. What do you know about him?"

I told him all I knew. I had never had any business transactions with the man but I did know a good deal about him personally. I knew many people who had done business with him and they all seemed satisfied. In fact, I had heard many favorable reports and no unfavorable ones. As I was telling my story, a bank director came in to the office and the president turned to him:

"Do you know anything about this fellow?"

The director picked up the statement. "Why, that's Tom. He worked for me for five years and I've been kicking myself ever since that I let him get away from me. You can go the limit with him."

I knew the other side of that story. Tom had told it to me. He had worked for that director through five years, and he had left because he could not see a chance in the world for himself there. Knowing the directors as I did, I felt very certain that Tom had not been treated justly. I would not have blamed him if, when he decided to leave, he had told his employer just what he thought of him. That is what the average man would have done.

A man who gets fired, or leaves, hardly ever misses the opportunity to get something off his mind. He thinks that he is a poor weakling if he does not do something to help out his pride. But Tom had done nothing of the sort. He had taken particular care to see that he did not make any enemies on leaving. He did not burn a single bridge behind him. While working there he had built a larger good will than he knew, and he left so carefully that when he was gone the good will remained and increased.

An ambitious man, working his way through, will ordinarily hold three or four, maybe a dozen, jobs before he reaches one that exactly fits or which he can alter to fit. In fact, very rarely is a man under thirty serving his own best interest by holding on to one job, or even one kind of a job, beyond a reasonable period.

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*Reprinted by arrangeent, from The American Magazine.

He needs contact with various kinds of organizations before he really knows what he is or what he wants. He can use these jobs to gain experience and to build personal good will, or he can use them just to gain experience and not care at all about the good will. If he does not care about the good will, he makes every future step forward unnecessarily difficult. He has to bother about getting new jobs, instead of having them offered to him. Then, when he does get placed, a crowd at once turns up to knock him.

I was talking the other day to the former employer of a man in whom I was interested. The employer, who was a very fair man, hesitated a good deal when I asked him his opinion but finally said:

"I would like to say something good about him. He has ability, but the way he acted just before leaving me makes it impossible for me to recommend him. I know he has acted in exactly the same way when leaving other places."

I can call to mind about half a dozen really first-class salesmen who are out of work, yet who ought to be working, because their ability is considerably above the average. They are all men between forty and fifty —the age at which a man is at his best. They are out of work solely because they have never left a job without a row. Not one of them ever left a job except with his head in the air and defiance sticking out all over him. Always in his next job, each man worked his fingers off trying to get the business of his former employer. And now people are afraid to hire them.

A genius can do what he likes. But the ordinary mortal needs every particle of good will that he can scrape together. Whatever business progress I personally have been able to make I attribute very largely to the good will that I have been able to build up. That explains why I never have had to look for a job. I have held quite a number, but I am on good terms with every office I ever worked in. Hardly a month passes that some of these old friends, who have passed on into other positions, do not unexpectedly give me some kind of a boost somewhere. You know that a contemptuous shrug of the shoulders or a single word may do a man as much harm in a critical situation as presenting the record of a jail term. An elaborate recommendation is well enough in its way; but a spontaneous; "Sure! He's all right!" is often what really turns the scale.

At seventeen, after finishing high school, I got a job as yard clerk in the Pennsylvania Railroad freight yards at McKeesport. For a year I checked cars as an assistant to the yardmaster. It was not much of a job and paid nothing to speak of. The future apparently was less than the pay, but it was the job first at hand, so I took it.

Of course I did not master railroading in a year, but I did get a rough working knowledge of freight movement that has ever since been helpful. A good many concerns that ship a large amounts of freight look for clerical recruits among the young men employed in the railway freight offices. The Frick Coke Company is one of them, and at the end of about a year I had an offer to go into its claim and traffic department as a clerk. It was the yardmaster that recommended me, I think.

In the coke company I was only one of many hundreds of clerks, and for seven years I remained there, getting the usual small promotions and increases of salary. But I got a great deal out of those seven years. The discipline was iron-clad. I had to take orders and execute them without knowing the why of the orders and without being able to question. I simply had to obey, or get out.

The personal element was entirely lacking. But the personal element and "sympathy stuff" can easily be overdone. A youngster does not need sympathy half as much as he needs work and discipline. All of which I may say, I discovered subsequently. I was not impressed with the virtue of the arrangements at the time. But being thrown with a great number of men does teach a man how to take care of himself—to get a line on the office politics that go on unceasingly within every big organization, and to get a good many rough edges worn off before they have time to do any particular damage.

The big organization provides a quick way to the top for the natural leader. It provides a haven for the kind of man who wants to leave his business when he leaves his office. And it provides a fine training for the kind of man who does not want to remain an employee, but who has not the exact qualities which will take him forward among a great mass of men.

At the end of seven years, I thought I'd had enough of big corporations, and I got a job as a junior with a large industrial engineering concern. I wanted to get a first-hand knowledge of the inner workings of a number of different kinds of business; and no employment offers as much opportunity in that line as industrial engineering. In a technical sense, an industrial engineer is not an engineer at all. He is a man who arranges processes, studies operations, and cuts out the waste. He brings to a job, if he is good engineer, the results of common sense and experience; and he studies how a business may best be connected. One would think that a man already in a business would best know how it ought to be conducted. But he rarely is, for he gets so close to his affairs that he cannot see even the most obvious defects. He gets so used to looking at things as they are that it never occurs to him to change them.

An industrial engineer often accomplishes the most marvelous results, simply because he has not been caught by the habits of the business. A junior industrial engineer is a kind of apprentice. He assists a senior. At first he does only what he is told to do; as he gains experience he is permitted to make suggestions.

I found in the first job to which I was assigned that an industrial engineer is about as welcome in the average office or factory as a boll weevil in a cotton field. He is always represented as the white-haired boy who is coming in to show everybody. He has to watch his step every minute and to keep his opinions to himself. No matter how poorly an operation is being done, the engineer cannot criticize. It is not safe even for him to suggest. He can merely ask questions—trying to lead around to what he wants done. Then maybe he can go so far as to say, "Don't you think, if we do it this way it might be better?" putting special emphasis on the "we".

This was the first experience I had ever had in managing men. But working in the coke company had given me a pretty fair idea of how men in general felt about being managed, and that knowledge helped. I found that the best way to get anything done effectively was to make the people concerned think that they themselves were doing it. On the other hand, some men I came in contact with had to be ordered. For me, men gradually became divided into two classes: The one class you could make friends of and have them take an interest with you. The other class had nothing of friendliness in them and had to be ordered. But I found that even ordering would not do, unless first I gained respect.

Take one such man as a sample. He was the plant superintendent of a carriage works to which I was sent. The first day I entered the shops, I heard some one sing out:

"Heh, boys, here comes another one of them to show us how!"

He was spoiling for a fight. Red-headed and sarcastic, he gave me a chance for a dozen rows during the first day. But I managed to keep myself in hand well, always pretending that he was not serious, that he was a sort of professional humorist. I never lost a chance to "kid" him. And I was fortunate enough usually to get the better of him, because I kept my temper and he did not. He did not come to like me, or be a willing worker, or anything of the kind. But he learned that he would get as good as he gave, which will usually keep a man of that sort in his place.

It was in the course of this engineering work that I was assigned to my present company. An old organization, founded in 1873, it was one of the first in the United States to make vulcanized fiber on a large scale. In those days, vulcanized fiber, which is really a treated paper, was used mostly for washers. In 1901, outside organizers formed the American Vulcanized Fibre Company, taking in the original company, which was in Wilmington, another company in Wilmington, and several companies in other cities. The new company did a good business; but, as always, in the case of monopoly, it charged prices so high as to attract competition. Other companies went into the business, and by 1910 our company had ceased to make any money at all and was in a fair way to default on its bond interest. The next year it retained the industrial engineers by whom I was employed and thus I became interested in its affairs.

We had two shops. Some of the machine work was done in one shop and some in another. The company had no method of planning the work; neither had it any regular system of storage of the material and articles in stock. Two separate stocks of the same kind frequently turned up, the second having been made because nobody knew about the first being on hand. This may suggest that the company had been managed much worse than the ordinary company. Such was not the case; the management was just about average.

The first step of the industrial engineers was, as always, to get at costs. A man in business who does not know his costs scientifically and accurately is merely gambling.

Getting at the cost of manufacturing and selling is the only way to discover what is the matter with a business. You first get the cost and then you are able to compute the value of improvements. You have something definite to work on. The costs are the guide posts for betterment. Starting with the costs, it took us six years to get the manufacturing on a fairly good basis. Real improvements do not come about overnight. They have to be worked through carefully, step by step.

One of the most startling facts we discovered almost at once was the immense loss through spoiled material; another big loss was through the bad management of the machines and the shops. The company made some of its own paper and bought the rest. The percentage of spoiled goods was highest in the paper made by the company. The old management had seen that; but, instead of trying to find out why, it had taken for granted that they just could not make paper, and had gradually turned to buying nearly all of the raw paper that they made into fiber.

The obvious thing to do was to find out why we could not make good paper. We put a chemist to work. He discovered that our paper varied according to the kind of rags used, the length of time, and the temperature used in cooking and beating. The next step was to determine the kind of rags and the degree of heat that would turn out the best paper for our purpose. Employing the chemist and making that comparatively simple investigation turned turned the tide of the company's fortunes; for not only was the old company buying a great deal of paper, but it was buying most of it from a concern that was also in the business of making fiber. It had to depend for its raw material upon a competitor!

Our machinery was scattered through two buildings. We gathered it all into one building. This immediately cut out a great deal of trucking. On some of the old jobs I calculated that the cost of unnecessary transportation within the plant was nearly equal to the cost of the machine work on the material.

Remember, we had no extra money with which to make large improvements. Everything that we did had to be on the least expensive scale.

For certain operations we brought in automatic machinery; not much at a time but piece by piece, whenever we found that it would pay for itself. We studied every possible operation with the cost sheet; and whenever we found that it could be done at a saving with an automatic machine, we found out how much that machine would cost in terms of the amount of work that it would do in the course of a year. Then, if the investment promised a profit, we made it.

The wages in the shops used to be paid on the day basis. We gradually shifted over entirely from the day to what is called the "task and bonus" basis—with the consent of the workmen. We got, by means of stopwatch records, standard times on every operation in the place. A "standard time" is the time in which the task ought to be done by a man working perfectly. Then we made an allowance for personal needs—because a man is not always working perfectly—and set a shop standard which was less than the ideal standard and which any reasonably competent workman could reach in a day. A workman was paid a day's wage if he made his standard production and one half of the day's rate for his production over and above the standard. That is, if the standard was one hundred and the workman turned out one hundred and fifty of an article, he would get twenty-five per cent. added to his wage. Every workman in the shop increased his wages, while our costs of labor, in proportion to output, dropped. We saved forty per cent. in labor costs alone, and yet every man in the place *earned more* than he had ever earned.

There were no spectacular changes. Not a penny of additional capital was put in; and yet, just by steadily working, first on one point and then on another, and by carefully following every detail, the company turned from losing money to making money. We did not have a single advantage — there was never an abnormal demand for our product. We simply plugged with our heads as well as our hands.

I am a great believer in plugging. It does not give much opportunity for fireworks, but it does get there. It is one thing to get a great big idea and go up with it like a rocket; but most of us never have an idea big enough to carry all before it. We just have to plug about twenty-four hours a day or so and try to make one dollar do the work of two. A few lucky or far-seeing men come in with the tide, but the great majority of us never drop into anything "soft." Take promotions. All my promotions have come unexpectedly, and I believe that most promotions come that way. The best-laid plans rarely workout — a man is hardly ever best qualified for the job that he thinks he is best qualified for, and I have noticed no end of men curtailing their opportunities by paying more attention to the job ahead than to their own.

In these days very worth-while employers pay much, if any, attention to seniority or to promoting through successive grades, as in the army. We built up our present organization almost entirely by taking men who were already employed with us and putting them into different jobs. For instance, I promoted the bookkeeper to purchasing agent. He had a good knowledge of materials; he knew what things ought to cost, and also he had a personality that was being wasted over the books. But the man whom I put in his place, although an exceedingly good bookkeeper, began to look at once toward becoming purchasing agent! As a consequence he fell down on the bookkeeping.

We had a factory superintendent who had a broad knowledge of processes and methods but he absolutely lacked executive ability. He could not manage men. Therefore as a factory superintendent he was a failure. The place for him was at the held of the order department. There he could use all of his knowledge in planning work and materials — and he could do nearly all of the work himself. He did not have to handle men. I made the former purchasing agent treasurer. There is an idea that a treasurer ought principally to know credits and collections and financial management. A treasurer does have to know these things; but in addition he ought to know the business.

I found several young college boys in executive positions — there had been an idea that the possession of a sheepskin was important. I changed these men to less important positions and put men who had been with the company ten or twelve years in their places. The best of the college men thanked me and later said that they had felt out of place because of their want of experience.

Nothing, to my mind, is silier than thinking that because a man is fairly old and is "set" in his ways there is nothing to learn from him. He is the man to learn from; and once he discovers that you are honestly trying to find the best way to do anything, he will be the first to help you work out new suggestions. We have one salesman who is seventy-two years old — and he is the best salesman I ever saw. He was formerly the superintendent of the Pittsburgh Division of the Baltimore and Ohio Railroad, but he has been with us for many years. He not only knows every possible user of fiber in his district, but also what kind of fiber the man ought to use. He does not sell — he is the adviser for his customers and he represents them as much as he does us. We have another salesman who is sixty-eight years old. If there are two better salesmen anywhere in the country than these men, I would like to see them!

All arts acknowledge that then only we know certainly when we can define; for definition is that which refines the pure essence of things from the circumstance. John Milton.

HOW "J. & C." GOT ITS NAME

The "J. & C." Portable Rosser, regarding which there has been much favorable comment of late, is the joint invention of H. L. Crouse, Washburn, Me., and Carl Johnson, Colby, Aroostook Co., Me. The original idea as to the principle of the machine, must be credited to Crouse, while the working out of the details, was largely the work of Johnson, who is a first class mechanic.

The principle of the machine is to rotate and advance the wood by spur rolls, much similar to the method employed in the Moreau barker, while the bark is removed by knives, revolving very rapidly on a small planer head. This planer head is attached to the extremity of a ladder, and part of its weight is carried by a compression spring, and, the balance bears directly on the stick being rossed.

The elevation of the head is controlled by a lever, and the depth of cut of knives, is also controlled by a lever operating a rolling gauge, bearing directly on the stick of wood.

The drive of the planer head is positive, and the drive of the spur rolls, variable.

The original "J. & C." Rosser was made largely of wood, even to the planer head, and the results obtained even with that crude machine were so encouraging that Crouse continued to make tests and improvements, until he developed the present compact, rigid, efficient machine, that has been giving satisfaction in Newfoundland, as well as Canada and the United States.

The manufacturers claim for this rosser reduced waste of wood and to substantiate their claim, they submit the figures of a certified test as follows:

Test made at Colby Siding, Me. September 17, 1920, in the presence of:

G. B. Burr, Bangor, Me.
G. F. Higgins, Presque Isle, Me.

In the interests of:

Stebbins Lumber Co., Boston, Mass.

	Before Ross.	After Ross.	Loss	
No. of Pieces	40	40	0	0%
Weight of wood	2232#	1777#	455#	20%
Girth	999″	920″	79″	8%
Content	0.5 cds	0.46	0.04	8%

Note: Wood had been cut four months, and dry piled, 40% fir.

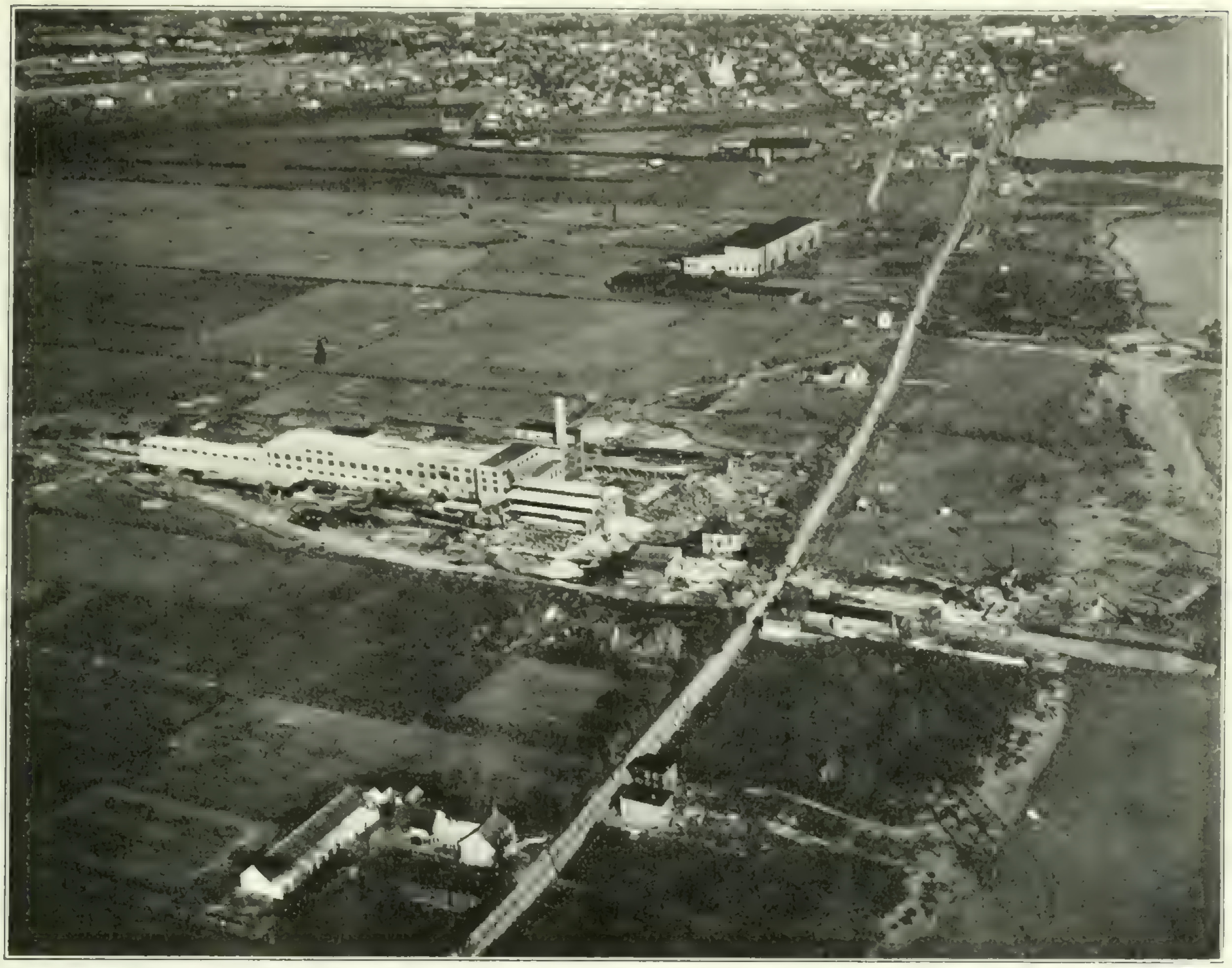
In addition to its economy of wood, it is a really portable machine.

The manufacturers of this machine are the J. & C. Portable Rosser Co., Washburn, Me., and the Smith Foundry Co., Ltd., Fredericton, N. B.

REGULAR CELLULOSE DIVISION OF A. C. S.

The Cellulose Division of the American Chemical Society has recently been authorized as a permanent division of the Society and wishes to enroll as members in the division all those who are interested in cellulose chemistry either from a scientific or practical standpoint. All members of the American Chemical Society wishing to become members of this division are requested to send their name and business connection together with one dollar ($1.00) for dues to the Secretary, L. F. Hawley, Forest Products Laboratory, Madison, Wisconsin.

The Paper Mills at Three Rivers, Que.



THE ST. LAWRENCE PAPER MILLS, LTD.

An aerial photograph of the newest paper mill in Quebec, prepared for the Pulp and Paper Magazine by Fairchild Aerial Services, Ltd., showing the layout of the plant, docking facilities on the St. Lawrence River, with other plants and city in the distance. This picture is the first of a series.

QUALITY

By S. B. COPELAND,

Vice Pres. & Res. Mgr. Eastern Mfg. Co.

The continued success of any manufacturing establishment in any line depends primarily upon the quality of the goods produced. This is particularly true of the fine paper business, and the difficulty of maintaining the proper quality is increasesd by the fact that many points of quality can not be accurately measured by definite standards, but depend very largely on personal judgment. Many and various are the troubles which are encountered and must be overcome. One of the most bothersome of these is the elimination of dirt, for an otherwise excellent sheet may be completely ruined because it is not clean. The sources of dirt are many, and it can be truly said that "eternal vigilance" is the price of clean paper.

The market for fine papers is an highly competitive one, and during the next few years it is going to be a question of the survival of the fittest. Quality will be the chief determining factor, more so than ever before. It is our aim to produce pulp and paper not only equal to that of our competitors, but the very bests in every respect that it is possible to produce. This cannot be accomplished and maintained without the earnest, whole-hearted co-operation of the whole organization down to the last man and woman in it.

At the present time an unusually intensive campaign is being waged against defects of any and all kinds and particularly dirt. The object of this communication is to make sure that every individual in the organization knows what the situation is, in order that they may the more understandingly co-operate and do their part. In all of our work let each of us constantly bear in mind that QUALITY COUNTS!

Progress In Water-Power Development

(Extracted from the Monthly Review of Agricultural
and Industrial Progress in Canada, published by
the Department of Colonization and
Development of the C. P. R.)

One of Canada's greatest resources is comprised in its wealth of water-powers. In this respect the Dominion takes second place only to the United States in the extent of power available, maintains the same relative position in horse-power available per capita of population, following Norway, and again occupies the second place after the Scandinavian country in per capita hydro development. The development of Canadian water-power resources has been a prominent feature of national progress in recent years, and probably no other industrial factor has been so largely responsible for the employment of capital and indirectly for the development of other industries. The bearing of Canada's great water-power resources upon the future manufacturing status of the country is significant and is rapidly transforming the Dominion from a country almost wholly agricultural to one in which manufacturing interests are of great and growing importance.

There has just been published by the Dominion Water Power Branch a further and up-to-date statement of water-power development in Canada, covering the period up to November 1st, 1922, and this reveals the substantial progress effected in the past few years in hydro development in all parts of Canada and the greater part Canada's water-powers have, in the last decade, come to play in the Dominion's industrial life. The recorded power available throughout the Dominion, under conditions of ordinary minimum flow, is 18,255,000 h.p. The water-power available under estimated flow for maximum development, i.e., dependable for at least six months of the year, is 32,076,000 h.p.

An analysis of the water-power plants scattered from coast to coast gives an average machine installation of 30 p.c. greater than the six month flow maximum power. Applying this, it becomes apparent that the at present recorded water-power resources of the Dominion will permit of a turbine installation of 41,700,000 h.p. In other words, the present turbine installation represents only 7 per cent of th present recorded water-power resources.

Recent Progress

During the year 1921 the readjustment of values following war-time inflation made substantial progress, but necessarily brought in its train many business and financial difficulties and a lack of confidence in trading circles generally which led to a reluctance of capital to embark upon new enterprise. It is a remarkable fact, however, that the hydro-electric industry, though naturally affected by the general depression, suffered no set-back, and in fact the horse-power installed during 1921, 300,000 h.p., stamps 1921 as one of the most progressive years in Canadian water-power history.

The 2,269,659 h.p. at present installed throughout the Dominion is apportioned to the following uses. A total of 2,164,870 h.p. in central electric stations for general distribution purposes, such as the operation of street railways, operation of mines, operation of electro-chemical and electro-metallurgical industries, operation of pulp and paper mills and for general industrial, municipal, and domestic use. A total of 484,228 h.p. is installed in pulp and paper mills. In addition there is used in the pulp and paper industry 160,577 h.p. purchased from the central electric station installation. A total of 320,561 h.p. is installed in industries other than central electric stations and pulp and paper mills. The total installation for the Dominion averages 338 h.p. per thousand population, a figure which places Canada second only to Norway in the per capita utilization of water-power among the countries of the world.

In Central Station Industry

By far the most important use to which development of water-power has been applied in Canada has been in connection with the central electric station industry. The extent of this industry and the important relationship which power bears to it is measured by the fact that 97.2 per cent of the power actually generated is developed by the use of water-power and that there is now invested some $501,400,000 in hydro-electric plants and systems engaged in the production, transmission, and distribution of electrical energy for sale.

Throughout the Dominion there are 269 hydro-electric central stations with an installed turbine capacity of 2,164,870 h.p. or a generator installation of 1,633,140 k.v.s. It is of interest to note that of this total turbine capacity 1,501,491 h.p. is installed in commercial or privately owned stations, while 663,379 h.p. is installed in municipal or publicly owned stations. The units vary in size from 10 h.p. to the 60,000 h.p. turbines recently installed in the Queenston development project and which are the largest water turbines anywhere installed. The turbine units of the industry average 3,425 h.p. whilst the average installation of the central stations is 8,088 h.p.

Continued and systematic progress is being made in the further development of the industry. New units are being installed, new plants constructed, and new projects investigated to meet the growing domestic and industrial demand for cheap hydro-electric energy.

Pulp and Paper Industry

The manner in which water-power has influenced and assisted in the development of the pulp and paper industry throughout the Dominion is demonstrated by the power statistics of the industry. Cheap motive power is almost as important to the production of pulp and paper as is the abundant supply of raw material in the fact that it takes practically 100 h. p. to make a ton of paper per day. It is not therefore surprising that the motive power used in this industry is practically restricted to hydraulic energy and that Canada's high position in the pulp and paper field rests largely on adequate and abundant water-power well distributed among extensive forest reserves.

WHOSE FATHER IS THIS?

He Was Thought Dead, But Is Alive

There has come to the hands of the editor, the letter which is reproduced herewith. The contents have been brought to the attention of Mr. Howard Smith people in Montreal, but it is quite evident from the fact that Mr. Smith's father cannot be the one referred to in the chaplain's letter. It seems quite probable therefore that the name of Smith, as given, is merely an assumed name, but there are sufficient other data given in the letter so that if any [illegible] of two brothers who are, or have been, in the paper industry in positions approximating those given in item 3 of the letter, it should not be difficult to establish the correct relation with the subject of the letter. Since the Pulp and Paper Magazine is read in every Canadian Pulp and Paper Mill, it is the hope of the editor that every reader will give this matter serious thought, and lend his efforts to discovery who the two men are whose father is in the hospital in England, and to bring this matter to the attention of anyone who per chance may be the ones referred to. The letter reads as follows:

Holborn & Finsbury Hospital
Archway Road
Upper Holloway N 19

January 2nd, 1923

Dear Sir:—

Would you let me know whether someone whom I have in this hospital is in any way related to you. I am writing on my own initiative, because the patient has said that you imagine he has for many years been dead, and when I asked why he did not communicate with you, he remarked that he did not wish to re-open the wound that the thought of his death occasioned you ten years ago — when you understood he had gone down on the Titanic. It was not your father but a seaman by the same name. Your father is here lying in the hospital, now some years paralysed one side, but otherwise most active. I have a deep respect for him, and I believe him to be a noble soul. If I told him you were being written to, he would be far from pleased, but I must let you know, I feel it my duty.

The name he has over his bed, (which may not be his real one, for he appears not to wish to be known, and keeps to himself) — the name is Mr. Smith. But in case the name is an assumed one, I write the following particulars by which you might recognize your father, if in case he be your father.

1. He has lead a seafaring life, sailing all over the world. Once he was shipwrecked and afloat for most of a week before being picked up.
2. His wife died some years ago, and he promised not to leave England again, but be buried with her.
3. He says he has two sons in Montreal, one the manager and the other engineer of the Paper Mills.
4. His eyes are blue, and rather prominent, looking of times grey. His nose is straight and prominent. He wears a short beard and moustache. The features are there of a strong and decided character, (which I should say he possesses).
5. He says he gave his sons a good education, and he is very anxious not to spoil their peace and happiness by letting them know of his whereabouts in hospital.

Again I say I write quite on my own responsibility. If this is your father, he would value your thought of him, but when you write perhaps it would be better to [illegible] Canada and I will [illegible] to him — that I have written you. [illegible] if you care to write direct, would you let me have a letter too to say you are writing, [illegible] I should be obliged if you would write me to say whether or not Mr. Smith is your father.

[illegible]
[illegible] W. L. [illegible]
Chaplain of Hospital and Vicar of St. Andrew's
Whitehall Park, London N. 19.

DON'T INFRINGE THIS PATENT

The Editor,
"Pulp & Paper Magazine of Canada":

Dear Sir,—"Bill the Papermaker" in his article on "Wire Troubles" on page 2019 of your issue of December 21st, 1922, refers to the beneficial effect of uninterrupted vacuum in the Boxes on the life of the Paper Machine Wires.

He omits, however, a number of important factors.

Bill is quite right in saying that the seam of a wire is placed under considerable strain merely by the quick change in its passage from the Boxes under vacuum to the intervening spaces under atmospheric pressure between the Boxes.

It seems, however, that the wire, and particularly the seam, is much more strained when it "knocks" against the edge of each of the Suction Boxes.

This "knock," particularly with high speed Machines, is in reality a high powered impact.

In a papermaking machine where the section boxes are spaced apart, this impact is repeated afresh on each of them, which means that in an average fast running news machine with eight suction boxes the seam of the wire receives eight hard knocks over the wire's own length.

Assuming the length of the wire to the 100′ and the paper machine to run at 900′ per minute, it means that the seam of the wire receives 72 hard knocks a minute.

Under the new arrangement of uninterrupted vacuum, the eight conjoined suction boxes have only one edge against which the seam of the wire can knock, so that under the same conditions as outlined above there are only nine knocks against the seam per minute as compared with seventy-two knocks under the old system.

Another feature to which Bill has not referred is that with the conjoined boxes a materially lower vacuum can be employed, obtaining just as dry a sheet as before, and consequently substantially reducing the friction between the wire and the boxes.

When the boxes are used apart, some of the water which has been removed by the vacuum in the boxes, and remains suspended in the wire, returns to the sheet in its passage from one box to another.

The main reason, however, why a lesser amount of vacuum is applied to the conjoined boxes is that this method avoids the inrush of air between the wire and the box on each of its edges.

If there are eight section boxes used on one paper making machine the inrush of air takes place on the sixteen edges of the eight boxes, while if the eight boxes are conjoined the inrush can only take place on two edges, thus saving 87½ of the loss.

It is simply means that a small fraction of the vacuum can do the same work even more efficiently than the whole vacuum [illegible] and scientific application.

For the information of those of your readers who are not aware of the fact, we may add that we hold Canadian Patents for the use and application of uninterrupted vacuum in the suction boxes.

We are always ready to give the benefit of our experience to those interested, and to grant them licenses on very reasonable and moderate terms.

It has been shown that uninterrupted vacuum not only increases the life of the wire, but has many other advantages, already through the small amount of vacuum employed, such as reduced two-sidedness in tinted sheets, a saving of fibre as well as of filler, to name only a few.

late J. MARX & Co.
Faithfuly Yours,
R. J. MARX.
ROBINMARX.

WEDDING BELLS

Fitzpatrick-Kernan

The Private Chapel at "Spencer Wood" was the scene of a quiet but pretty wedding at eleven o'clock a.m., Feb. 8, when Miss Alice Fitzpatrick, second daughter of the Right Honorable Sir Charles Fitzpatrick, Lieutenant-Governor of the Province and Lady Fitzpatrick was married to Mr. Robert Peebles Kernan, Vice-President and General Manager of the Donnocona Pulp and Paper Company. The chapel was tastefully decorated with lillies and roses and the ceremony, which was performed by Rev. Fahter Connolly, Rector of St. Patrick's Church, assisted by Rev. Father Maguire, Parish priest of Sillery, was attended by members of both families. The bride was given in marriage by Sir Charles Fitzpatrick, while Mr. Frank Kernan, brother of the groom, acted as best man. Messrs. Arthur Fitzpatrick, K.C., brother of the bride, Mr. Warnick-Kernan, Mr. Francis Kernan and Lieut.-Col. Frank Stanton were ushers. After the ceremony breakfast was served and Mr. and Mrs. Kernan left for their honeymoon trip to the United States. On their return they will reside in Quebec.

MR. ROBERT P. KERNAN

Brown—Chahoon

Southern smilax and spring flowers were charmingly arranged in St. Stephens's Church, Grand'Mere, Que., while Easter lilies decorated the altar for the marriage, last Wednesday evening of Mary Elizabeth, eldest daughter of Mr. and Mrs. George Chahoon, Jr., and grand daughter of the late Mr. William McEchron, of Glens Falls, N.Y., who was a pioneer in the development of the Province of Quebec, and also of Senator George Chahoon, of New York State, to Mr. George Edwin Brown, formerly of Wollaston, Mass., now a member of the Woodlands Division of the Laurentide Company, Limited. The ceremony was performed by the Right Rev. Lennox Williams, Bishop of Quebec, assisted by the Rev. William Henry Moorhead, rector of the parish of Grand'Mere. On account of the large number of out-of-town guests, including the members of the two families, and the limited space in the church, the number of those witnessing the ceremony was of necessity restricted. At eight o'clock the bridal procession entered the church preceded by the maid of honor, Miss Margaret McEchron Chahoon, sister of the bride, followed by the brides-maids, Miss Katherine Townsend, of Cooperstown, N.Y.; Miss Jane Hickok, of Harrisburg, Penn.; Miss Isabelle Rockeferrer, of New York city, and Miss Eliza Talbot, of Dayton, Ohio, all of whom were school friends of the bride at Westover. The bride was given in mariage by her father, Mr. George Chahoon, Jr. At the chancel steps with the bride-groom was his best man, Mr. Stanley Harvey-Smith, of London, England. The ushers were Mr. W. Dicker Stroud, Mr. T. Rogie McLagan, Montreal; Mr. Harcourt Powel, Quebec, and Mr. Herbert Moate, of Wimbledon, England. The wedding music was played by the Ritz orchestra, of Montreal, which also played for the reception following the church service, at the Laurentide Club.

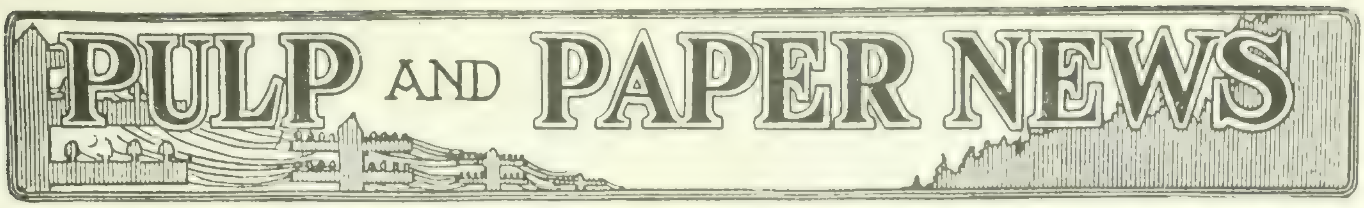
THE ASPEN

Where all the rivers northward run
Beyond the Height of Land,
And where the law is just a gun,
The judge a steady hand,
The feeble aspen of the South
Becomes an artic king.

And so the man who journeys where
The road to Hudson's lies,
His wine the sharp Canadian air,
His compass in the skies,
Grows stronger like the aspen tree
That in the North appears—
Takes on the stature presently
Of arctic pioneers.—Douglas Malloch.

HOW TO USE COAL

With the object of investigating the feasibility of adapting Canadian soft coal to furnace use, Hon. Charles Stewart, Minister of the Interior, is organizing a committee of coal and mining experts under the chairmanship of Dr. Charles Camsell, Deputy Minister of Mines. In addition to other duties the committee will also give considerable attention to educating the public with regard to the best means of using coal.



PULP AND PAPER NEWS

Damage estimated at $50,000 was caused to the box and label department of the H. J. Jones Lithographing plant on Dundas Street, London, on Feb. 8th. The fire is believed to have started from waste in an elevator shaft.

Master painters of America, who held their annual convention in Toronto last week, endorsed the criticism made by Frank M. Schulz, of Newark, New Jersey, of the American wallpaper which has been manufactured since the close of the war, and unanimously supported the resolution that a committee of three be appointed to discuss an improved product with paper manufacturers Mr. Schulz said that master painters in the United States cities were recommending the use of paint in preference to paper. He said that the stock in many instances was inferior to the pre-war product, and that the paper was so soft and pulpy that it was frequently next to impossible for the mechanic to hang it. He also declared that designers of wallpapers had lost their creative possibilities, and that harmony in the making of wallpapers was not considered today.

Concerning the decision of the Ontario Government to assume control of the flow of water in the Abitibi River in connection with the granting of a lease on the development of Island Falls by the Hollinger Consolidated gold mines, it has been learned that the Abitibi Power and Paper Company is not disposed to relinquish what is claimed as "prior" rights and that the probable course that may be pursued in the event of Premier Drury pressing his present plan, will be to appeal to the Dominion Government at Ottawa on the grounds that the Abitibi River is a navigable stream and thereby under the juridiction of the Federal Government with respect to such matters as are now in question. It has not been possible as to what explanation will be given with regard to the undisputed authority hitherto held by the Ontario Government over the Abitibi wherein the Abitibi Power and Paper Company itself has been given leases on Iroquois Falls and Twin Falls, and where over fifty thousand horse power are now being developed.

The many friends in the paper trade of V. T. Haney, Toronto manager for the Rolland Paper Company, will regret to learn that he underwent a serious operation at a hospital in Toronto last week. An early recovery is hoped for.

The sympathy of a wide circle of friends in paper and lumber circles will be extended to George B. Van Blaricom, Toronto, of the Canada Lumberman, whose wife, Eva Minnie Mix, Formerly of Ottawa, passed away after an extended illness at the family residence in Toronto. The remains were taken to Belleville for interment.

Mr. Wheeler, of the Franklin Paper Company, Holyoke, Mass., was a business visitor in Toronto last week.

J. B. Larkin, of the Federal Paper Company, Montreal, called on the Toronto paper trade last week:

G. W. Finlay, of the Strathcone Paper Company, spent a few days in Toronto last week on business.

Among the "grip" victims in Toronto last week was R. J. Flynn, of the Buntin, Reid Company, who was laid up for several days.

The many friends of Bert Bradshaw, of Gradshaw, Limited, wax paper manufacturers, will regret to learn that he is laid up with illness. The many friends of I. H. Weldon, President of the Provincial Paper Mills Company, University Avenue, Toronto, were pleased to greet him last week after over a week's indisposition from la grippe which confined him to his bed.

It is reported at Port Arthur that negotiations are under way between representatives of the Great Lakes Paper Company and the owners of the Longlac and Nenagami concession which are located east of Lake Nipigon, and that the proposal is to merge these with the Black Sturgeon and Pic limits already owned by the Great Lakes Company who would proceed with the whole development as the one scheme. The Longlac and Nenagami concessions were sold by the Government during the depression of 1921 and fetched extremely low prices, considering their timber value. The greater part of the timber is naturally tributary to Lake Nipigon, although no condition was attached making it obligatory on the part of the successful tenderer to use Hydro power, which is available through the Cameron Falls development on either of the concessions.

Fire of mysterious origin destroyed the large four-story and basement warehouse on Clarence Street, London, of Reid Brothers & Co., wholesale stationers, on Feb. 4th. The loss, which is $100,000, was covered by insurance to the extent of about 80 per cent.

John F. Ellis, head of the Barber & Ellis Company, Adelaide Street, Toronto has been elected Vice-President of the Crown Life Insurance Company in succession to Mr. Justice Mowat.

Dr. Bernard Edward Fernow, one of the best known forestry experts in the world, died a few days ago at his residence in Toronto after a protrasted illness. The late Dr. Fernow was called the father of forestry in North America. He established the faculty of forestry at the University of Toronto in 1907. He was Chief Forester for the United States from 1886 to 1898 and was director of the New York States College of Forestry at Cornell University from 1898 to 1903.

Mr. Frank W. Clark, of the Gulf Pulp and Paper Company, is on a visit to England in connection with business relating to the British connections of the Company.

Charles Walmsley and Company (Canada) Limited, have opened an office in the Drummond Building, Montreal. Preparations are now being made for reopening the Longueuil plant acquired from Armstrong, Whitworth of Canada, Limited, and it is expected that operations will be commenced early in March. Newsprint machines ordered by Price Bros. will be built in the plant.

Mr. H. S. Taylor of H. S. Taylor, Limited was a visitor to Montreal last week.

Mr. F. N. McCrae, president of the Brompton Pulp and Paper Company is a patient in the Montreal General Hospital.

Mr. Arthur Jewitt, of the Montreal office of the Provincial Paper Mills Limited, has been on a visit to Toronto.

Mr. Bruce Brown, Vice-president of the T. B. Little & Co., Montreal, has been among the many suffers of the influenza epidemic.

A wide circle in the paper trade will learn with regret of the death of Mr. Joseph E. Langlois, the Ottawa representative of the Howard Smith Paper Mills, Limited, and local manager of the Federal Paper Company, Limited. Mr. Langlois, who was 38 years of age, died on February 3. The funeral on the 7th inst. at Ottawa was attended by about 200. Mr. Langlois represented the Howard Smith Paper Mills, Limited for 15 years. He leaves a widow and one child.

The feature of the Winter Carnival of Berlin, New Hampshire, was the Northern New Hampshire Dog Sled Race. This was participated in by teams from Province of Quebec companies, Price Bros., and Holt Renfrew sent competitors, other entrants being a team of Canadian crossbreds belonging to the Brown Corporation, and a team f Edward P. Clark's Labrador huskies. The race took place on two days, and was won by Jean Lebel, Brown Corporation, Joe Dupuis, Price Bros., coming second.

"A DUMMY REHEARSAL" AT PAPER CLUB

The members of the Montreal Paper Club have heard many inspiring and educative talks at their monthly luncheon, but they have listened to nothing better than the talk by Mr. John Clayton, of the Ronalds Press and Advertising Agency, n February 13, at the Queen's Hotel. Mr. R. M. Maclean presided. Mr. Clayton's address was entitled, "A Dummy Rehearsal", but this gave no clue to the subject matter, which dealt with copy writing and advertising. His object wos to show the difference between writing copy which lacked vitality and that which conveyed in a vivid manner a message to the persons whom it was desired to interest to the point of buying.

A copy writer shuld endeavor to put himself in the place of the man or woman to whom the advertising was directed—to visualise how the written word would appeal to possible buyers. Mr. Clayton illustrated his talk with examples of actual advertisements—folders and pamphlets—of widely diversified commodities. In a dramatic and humorous way he pointed out their defects, and showed how they could have been written in order to bring home to the public the ideas at which the writers were aiming, and how they could be transformed from dull, commn place productions into advertisements which would command attention and effect sales. The object of any form of advertising is to influence business, and Mr. Clayton declared that its design was not of paramount importance provided it brought results, even if it broke many of the laws held sacred by some copy writers.

SECOND MACHINE TO MAKE PAPER

Colonel C. H. L. Jones, Vice President of the Fort William Paper Co., and director of the Spanish River Pulp & Paper Co., in Fort William today, from Sault Ste. Marie, announces that the second newsprint machine in the Fort William plant is now in course of construction. The first machine, which began to turn out paper at the first of the year, is working satisfactorily, Col. Jones says, and the second machine is expected to be in operation within a month, which will give the Fort William plant an initial output of 120 tons of newsprint per diem.

The Central Paper Company of Muskegon, Mich., has started construction of a $200,000 addition to its plant at Muskegon.

RIORDON CO. TO MEET EXPENSES OF COMMITTEE

It was announced today in a circular to creditors of the Riordon Company that the expenses of the creditors' committee would be defrayed by the company to the extent of $4,000 per annum. This settles a question raised at the meeting held here in November by creditors who were doubtful as to the advisability their being further assessed in this connection.

The circular further announces that Roy Campbell will replace S. S. Perry, resigned as representative of the committee. Mr. Perry is acting secretary of the Riordon Company. These arrangements have the approval of the 8 per cent bondholders' committee.

The circular, signed by the Riordon Company creditors' committee,R. Montague Davy, chairman follows:

"As you will recollect, the general meeting of creditors held on November 16, 1922, requested your committee to continue to serve, and to fill any vacancies which then existed or which might occur. At a meeting of the committee later in the day the two vacancies caused by the resignations of W. S. Sample and Charles E. Fraser were accordingly filled by the election of A. E. G. Madley of Montreal, and A. L. Perkins, of Powassan, Ont. The personnel of the committee otherwise remains as before.

"A the general meeting, the question of the appointment of a representative was discussed, and it was decided to leave the matter in the hands of the committee, who should endeavor to arrange for the assumption by the Riordon Company of the renumeration of the representative and the other incidental expenses in connection with the committee, with power, in event of failure, to make an assessment upon the creditors to produce a sum not in excess of $10,000.

"We are glad to inform you that our discussions have led to an arrangement by which the expenses of the creditors, committee up to a total of $4,000 per annum will be provided by the company, and no assessment is therefore necessary at this time.

"It has also been arranged that Roy Campbell will act from this time forward as the representative of the creditors' committee in the place of S. S. Perry, resigned. Mr. Campbell, as acting secretary of the Riordon Company, is in a position to furnish to the creditors any special information which they may require or to undertake on their behalf any negotiations requiring the services of a representative constantly on hand to watch their special interests, and we have no hesitation in unreservedly recommending you to communicate fully with on any matter in which you desire information or advice.

"To this arrangement the committee has the approval of the representative of the committee of the eight percent bondholders, and your committee is much pleased at this evidence of co-operation between these elements in the Riordon situation.

"Your committee is in a position to know that the affairs of the company are proceeding satisfactorily under the circumstances, and in due course further general reports will be issued to you."

A man is like a tack, he can only go as far as his head **will let him.**

EXPORTS OF PULP AND PAPER—DEC. 1922

A special report from the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for December. The total value of the pulp and paper exports for the month was $10,249,418 which was a decline of $1,176,580 from the previous month and a slight decline from December 1922.

Details for the month were as follows:

	December 1921		December 1922	
	cwts	Value	cwts	Value
Paper:				
Newsprint	1,453,195	$5,708,178	1,710,110	$6,127,921
Book Paper	1,307	12,561	1,650	10,880
Other Paper & Mnfrs.	....	395,411		483,586
		$6,116,150		$6,622,387
Pulp:				
Sulphate (Kraft)	240,833	744,774	222,966	714,533
Sulphite Bleached	307,428	1,260,028	252,039	1,094,469
Sulphite Unblchd.	392,990	1,092,464	322,023	820,317
Mechanical	750,793	1,112,117	602,985	997,712
	1,692,044	$4,209,383	1,400,013	$3,627,031

The principal countries of destination of these exports in December are shown in the following table:

	Paper	Pulp	Total
United States	$6,068,934	$3,147,055	$9,215,989
United Kingdom	158,610	302,038	460,648
Other Countries	394,843	177,938	572,781
	$6,622,387	$3,627,031	$10,249,418

Pulp wood exports for the month were 85,744 cords valued at $836,396 compared with 46,379 cords valued at $480,160 in December 1921.

The figures for the nine months ending December 31st, show considerable increases over those for the corresponding nine months of 1921. Wood pulp exports were nearly 50 per cent., greater than last year and newsprint exports were over 40 per cent. greater. The total value for the period was $88,320,722 compared with a total of $77,905,275 in 1921.

The details are as follows:

	9 Months 1921		9 Months 1922	
Paper:	cwts	Value	cwts	Value
Newsprint	10,465,807	$47,835,903	14,517,771	$51,563,093
Book Paper	16,046	190,016	30,379	313,002
Other Paper & Mnfrs.	......	3,070,416	...	4,611,755
	......	$51,096,335	.....	$56,388,810
Pulp:				
Sulphate	1,664,357	$ 5,703,918	2,253,521	$ 6,963,864
Sulphite Blchd	1,238,941	5,576,279	2,313,526	9,243,864
Sulphite Unblchd.	2,136,412	7,181,308	3,443,866	8,422,758
Mechanical	4,109,593	8,347,435	5,068,087	7,301,426
	9,149,303	$26,808,940	13,079,000	$31,931,912

These figures show an increase in our exports of newsprint of 4,051,964 cwts., exports of book paper have almost doubled and pulp exports increased by 3,929,697 cwts.

Pulpwood exports for these nine months amounted to 749,811 cords valued at $7,710,205 compared with 564,446 cords valued at $7,229,593 in the nine months of 1921.

THE TREATY WITH FRANCE

Products of the pulp and paper industry are affected by the new commercial treaty between Canada and France. The following enjoy the benefit of the minimum tariff of France; cellulose pulp, paper and cardboard, duplicating paper, albumenized photographic paper, sensitized, and cardboard in sheets or plates. Under schedule B Canadian products enjoy the benefit of the percentages of reduction mentioned below, such percentages to bear on the difference between the rates of the general tariff and those of the minimum tariff: cardboard boxes, 60 p.c.; cardbard wares ornamented with paintings, 50 p.c; articles of cardboard or of cellulose moulded, compressed 80 p.c: papermaking machines 50 p.c; felt and felted cloths for machines 40 p.c; felted tissues for paper making 40 p.c; wall paper (other than Linerusta Waltaon and the like) 60 p.c.; cardboard (moulded, reinfreed or not called papier maché) 60 p.c.; cardboard, cut,, growed r shaped, 60 p.c.

French products receiving the benefit of the Canadian tariff less a discount of 10% on the amount of duty:—Strawboard, millboard and cardboard, not pasted or coated; tarred paper felt-board, sandpaper, glass or flintpaper and emery paper, or emery cloth, paper of all kinds, n.o.p., ruled and border and coated papers, boxed papers, pads not printed, papier-maché ware, n.o.p.; Paneteries, envelopes and all manufactures of paper n.o.p.

For all right judgement of any man it is essential to see his good qualities before pronouncing on his bad.
Thomas Carlyle.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties and Testing of Raw Materials and Finished Products

A-14 The Testing of Paper. RAYMOND FOURNIER. **Papier** xxv, 437-440 (Oct. 1922). Translation by A. Papineau-Couture in **Paper Trade J.** lxxv, No. 23, 50-51 (Dec. 7, 1922). See this journal xx, 2723 (Dec. 21, 1922). (**P. T. J.** lxxv, No. 25, p. 58 (Dec. 21, 1922).-A.P.-C.

A-14 Moisture Influence on Tests of Container Board. SIDNEY D. WELLS, Forest Products Lab., Madison, Wis. **Paper Trade J.** lxxv, No. 23, 47-49 (Dec. 7, 1922); **Paper Ind.** iv, 1245-1247 (Dec. 1922); **Paper** xxxi, No. 7, 7-9 (Dec. 6, 1922). Curves are given showing the relation of relative humidity of the air to Mullen test, tensile strength, folding endurance, and tearing strength of boards and of papers made from typical stocks which find their way into board manufacture.-A.P.-C.

A-14 R-11 Work of the Paper Laboratory of the Bureau of Standards. F. A. CURTIS. **Paper Trade J.** lxxv, No. 8, 30, 32, 34, 36 (Aug. 24, 1922). An outline of the work carried out at this laboratory.-A.P.-C.

A-14 Improvements in Methods of Making Herzberg Stain Used in Fiber Analysis. MURIEL F. MERRITT, Bureau of Standards, Washington. **Paper Trade J.** lxxv, No. 8, 43-44 (Aug. 24, 1922). As a result of a careful investigation into the best method of preparation of the Herzberg stain, the author recommends the following procedure. Solution A: Dissolve 50 g. of dry zinc chloride (fused sticks in 25 cc. of distilled water, and, if necessary, add water till the specific gravity is exactly 1.8 at 28°C. Solution B: Take part of 12.5 cc. of distilled water to rinse the thermometer, the hydrometer and the original zinc chloride container and add to solution A. Dissolve 5.25 g. of potassium iodide and 0.25 g. of iodine in the balance of the water. Add B to A, stir well, let stand over night in the dark, pipette off the clear portion into a black bottle, leaving 3 to 4 cc. of the solution above the sediment, and add a leaf of crystal iodine.-A.P.-C.

A-15 Constitution of Diamylose and of the Anhydrosugar -Cellosan) which is the Building Unit of Cellulose. P. KARRER and ALEX P. SMIRNOFF. **Helvetica Chimica Acta** v, 187-201 (1922). Translation by C. J. West in **Paper Trade J.** lxxv, No. 15, 54-56 (Oct. 12, 1922). By means of reactions with phosphorus pentabromide on various carbohydrates, formulas are deduced for octaacetylcellobiose, octaacetylmaltose, starch, diamylose, and cellosan. The latter formula shows why 2, 3, 6-trimethylglucose is obtained on hydrolysis of methylated celluloses and that cellosan is not only an anhydride of cellobiose but also of maltose or isomaltose.-A.P.-C.

A-15 Cellulose Copper Compounds. K. HESS, E. MESSMER, and E. JAGLA. **Ber.** lv, 2432-2443 (1922); **J. Soc. Chem. Ind.** xli, 892A (Nov. 30, 1922). It is shown by interpretation of the effects of copper hydroxide and ammonia on the specific rotation of cellulose in the light of the law of mass action that the soluble complex compounds of cellulose probably contain the metal and the carbohydrate in the ratio 1Cu: $2C_6H_{10}O_5$, but that a different multiple of the $C_6H_{10}O_5$ group is also possible. The isolation of the compound $Na_2(C_{12}H_{16}O_{10}Cu)_2$, formed by the action of caustic soda on a cuprammonium solution of the biose-anhydride from cellulose or by the action of caustic soda and copper hydroxide on cellulose, considerably strengthens the first conception.-A.P.-C.

G — Wood Preparing and Equipment

C-2 R-6 Mechanical Extraction of Moisture from Bark. GEO. D. BEARCE and JOHN D. RUE. **Paper Trade J.** lxxv, No. 14, 49-50 (Oct. 5, 1922). Details are given of tests carried out with a Paulson bark press and with an American bank press, actually installed in mills. In the first case the bark from the press was 43.7% bone-dry (balsam) and 39.7% (spruce), while in the second it was 41.5% bone-dry (spruce, No conclusions are drawn from the tests.-A.P.-C.

C-2 R-6 Utilization of Bark and Wood Refuse as Fuel. **Paper Trade J.** lxxv, No. 14, 51-54 (Oct. 5, 1922). This is a supplementary report by the Waste Committee of T. A. P. P. I., giving the results of the questionnaire which they sent to various mills on the disposal of bark and wood refuse. From this and from information in the literature they conclude that: (1) The refuse to be of much value as a fuel must be at least 50% dry or the design of the furnace must be much that it is dried to this extent before reaching the combustion zone. (2) The construction of the furnace, control of air, and method of feeding the fuel must be carefully considered. Attention should be given to the method of measuring the waste, which method will vary in different mills.-A.P.-C.

F. — Alkaline Pulping Processes

F-2 Obtaining Light Oils from Wood Tar, Resin Oil, etc. **Svensk Pappers Tid.** xxv, 82-83 (1922); **Chem. Abs.** xvi, 4339 (Dec. 10, 1922). To facilitate the separation of the light oils and other volatile constituents from wood tar and to obviate their decomposition when volatilized from large quantities of heated liquor, Peterson utilizes two fire boxes with smoke passages which will allow the gases to go entirely through either or partly through each. Raw material is fed by separate pipes from an overhead reservoir to separate vaporizers of spiral form as shown in two detailed diagrams.-A.P.-C.

F-4 Evaporation of Waste Liquors from Pulp Mills. K. L. THUNHOLM. **Svensk Pappers Tid.** xxv 231-235 (1922); **Chem. Abs.** xvi, 4345 (Dec. 10, 1922). The dry substances in waste liquors contain much latent heat which can be utilized if the accompanying water is separated. Raising the temperature in the evaporatotrs to 125 to 175° and using the heat of the vapor to dry pulp lowers the usual 35% loss of heat and also the amount of water left in the residue. The author has devised a circular chamber with steam heated shelves around the sides; liquor is run onto the upper shelves from which it overflows to successive lower shelves supplied with constantly moving scrapers. Detailed figures on cost saving show that this appartus will save for Swedish mills more than the cost of stor age and transportation of coal at pre-war prices.-A.P.-C.

F-4 The Causticizing System in the Soda Mill. J. E. MOUNT. **Paper Trade J.** lxxv, No. 17, 61-63 (Oct. 26, 1922). A discussion of the value of the drum filter and of the continuous causticizer as applied to the soda liquor room, with a brief mention of other places in the mill where the drum filter might be used to equal advantage (washing brown stock, bleached stock, and black ash).-A.P.-C.

F-4 Liquor Evaporators for Sulphate Mills. O. OLSSON. **Svensk Pappers Tid.** xxv, 29 (1922); **Chem. Abs.** xvi, 4060 (Nov. 20, 1922). Modern plants use 25% less fuel than the older types. With the proper use of waste heat a Kestner apparatus should have an efficiency of 85 to 90%. Coupling pulp mills with sawmills eliminates expense of preparing chips.-A.P.-C.

F-0 The Removal of the Odors in Sulphate Pulp Mills. C. G. SCHWALBE. **Zellstoff u Papier** ii, 175-178 (1922). Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 21, 51-52 (Nov. 23, 1922). A discussion of the formation of malodorous substances in the manufacture of sulphate pulp, with a description of the author's process (Ger. patent 319,594. See this journal xx, 909, Oct. 19, 1922) for eliminating them.-A.P.-C.

H — Bleaching, Bleach Manufacturing and Equipment

H-4 New Diaphragm Cells in the Electrolytic Soda Industry. PAUL FABRE. **Chimie et Industrie** viii, 524-527 (1922). A brief discussion of cells of the Townsend and Allen-Moore type, showing their merits and demerits and the lines along which they could be improved; improvement of the asbestos diaphragms and of the graphite anodes. The author also briefly touches on the merits of the mercury cathode cell, the chief of which is elimination of the evaporation of the caustic liquor.

K — Paper Manufacturing and Equipment.

K-1 M-12 Instrument for Measuring the Degree of Beating of Pulp. E. W. L. SKARK. **Papierfabr.** xx, 845-852 (1922). Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 21, 53-55 (Nov. 23, 1922). See this journal xx, 975 (Nov. 2, 1922). (**Paper Trade J.** lxxv, No. 19, 56, Nov. 9, 1922).-A.P.-C.

K-7 Three Roll Beater. E. and O. MASSART. Fr. patent 522,794. Aug. 23, 1920. **Papier** xxiv, 453-455 (Oct. 1921). Translation by A. Papineau-Couture in **Paper Trade J.** lxxv, No. 23, 49 (Dec. 7, 1922). See this journal xx, 818 (Sept. 21, 1922). (**Paper Trade J.** lxxiv, No. 18, 58, May 4, 1922).-A.P.-C.

K.-10 Function of Sulphate of Alumina in the Sizing of Paper. F. M. BOUVIER. **Non-Papeterie Francaise** liii, No. 4, 99-100 (Feb. 15. 1922). Translation by A. Papineau-Couture in **Paper Trade J.** lxxv, No. 16, 51-52 (Oct. 19, 1922). See this journal xx, 840, (Sept. 28, 1922). **Paper Trade J.** lxxv, No. 16, 54, (Oct. 19. 1922). A.P.-C.

K-12 K-18 Hy-Vac Sluice for Use in Connection with Cylinder Paper and Board Machines. Paper Trade J. lxxv, No. 14, 55-57 (Oct. 5, 1922). The object of the "Hy-Vac" sluice is to control and prevent the waste water from accumulating in front of the couch rolls on a cylinder machine, which is accomplished by applying suction through an intake nozzle resting on the felt at its first point of contact with the mold, the nozzle being at an angle of about 45° with the horizontal so as to give easy flow and ample clearance from the [illegible] The [illegible] advantages of this sluice are enumerated.-A.P.-C.

K-12 Wire Savings by the Use of Ball Bearings. JOHN KEPKE, Jr. **Paper Trade J.** lxxv, No. 2, 53 (July 13, 1922). A discussion of the substantial economy in wire obtained by the use of ball bearings, which is illustrated by the fact that two somewhat similar high speed machines in the same mill, one equipped with ball bearings and the other with plain bearings, were found to have average wire life of about 25 days and 12 days respectively.-A.P.-C.

K-19 Coated Papers. Papierfabr, xx, 479-483 (1922). Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 8, 45-48 (Aug. 24, 1922). Brief description of the manufacture of chromo, stained, metal-coated and velours papers, of the preparation of the pulp used for these grades of paper, and of the characteristics of the machine for transforming them into paper.-A.P.-C.

R. — General

R-5 Conditions in the German Wood Pulp and Paper Industry. F. T. F. DUMONT. **Paper Mill** xlv, No. 46, 16, 38 (Nov. 25, 1922). Brief analysis of the present conditions in the industry, and more particularly of their effect on newspaper publishing.-A.P.-C.

R-8 Traffic Details in the Paper Industry. J. A. QUINLAND, St. Regis Paper Co. **Paper Mill** xlv, No. 45, 20, (Nov. 18, 1922); **Paper Ind.** iv, 1250-1251 (Dec. 1922). Brief notes on description of shipments so as to obtain low rate classification, avoiding demurrage charges, and fitness of cars for loading paper.-A.P.-C.

R-11 Research Problems in the Pulp and Paper Industry. E. SUTERMEISTER. **Paper Ind.** iv, 1087-1091 (Nov. 1922). A brief outline of some of the more important problems in: cellulose chemistry, sulphite, soda and sulphate processes, bleaching, sizing, beating, classifying and valuing of fillers, paper making, investigation of new fibers, and coating of papers.-A.P.-C.

R-12 Manufacturing Efficiency and Comparative Conversion Costs. THOS. J. BURKE, Cost Association of the Paper Industry. **Pulp and Paper** xx, 921-923 (Oct. 26, 1922); **Paper Mill** xlv, No. 42, 2, 10, 12, (Oct. 28, 1922). The author briefly discusses how far a trade association may go in collecting conversion cost data to assist its members to produce more efficiently, without coming in conflict with the federal U. S. laws, and makes a plea for investigation on the part of the paper purchasing commissions of the Washington government to see that successful bidders do not furnish below cost, which would constitute "unfair competition". He then shows the distinction between costs and expenses in manufacturing and outlines how the Cost Association proposes to collect and make available reliable statistics on "comparative conversion costs".

R-13 Fifth Annual Convention of the Canadian Paper Trade Association, Toronto, Oct. 25 and 26, 1922. Pulp and Paper xx, 947-951 (Nov. 2, 1922); **Paper Trade J.** lxxv, No. 18, 28, 30, 32, 34 (Nov. 2, 1922); **Paper Mill,** xliv, No. 43 2, 30, 32 (Nov. 4, 1922). Account of the meeting, including the president's address and the secretary's report.A.P.-C.

R-0 Developments in the Standardization of Paper. S. L. WILLSON. **Paper Mill** xlv, No. 41, 32, 34, 72, 74, 75, (Oct. 21, 1922); **Paper Trade J.** lxxv, No. 17, 23-25 (Oct. 26, 1922); **Paper** xxxi, No. 4, 10-13, (Nov. 15, 1922). An outline of the work being carried out by the U. S. Bureau of Standards in co-operation with the American Paper and Pulp Association and the National Paper Trade Association.-A.P.-C.

UNITED STATES NOTES

T. T. Webster, general traffic manager of the G. H. Mead Company of Dayton, Ohio, has been selected to head the Pulp and Paper Traffic League of the United States. The League's membership represents 128 companies throughout the United States operating 208 mills. The combined capacity of these mills is 6,356,308 tons of paper annually. Mr. Webster is also president of the Miami Valley Traffic Club. He is widely known in paper trade circles throughout the country.

Unusual efforts are being made by small dealers in the larger cities of the United States to gather stocks of old paper. The higher prices that are now being offered by the mills and the scarcity existing at present has given an activity to this market that is noticeable right down the line to the housewife. The latter is now paying more attention to the value of old newspapers and wrapping papers than she has been doing. While the low production of paper of last year will naturally be reflected in a shortage of old paper stock this year, there is now more of an incentive to save this much needed commodity and it is believed that less of it will go up in smoke.

A bill has been introduced in the New York State Legislature under which the cutting of trees on privately owned forest lands would be prohibited unless consent shall first have been obtained from the State Conservation Commission. The prohibition does not apply to dead or fallen timber or the cutting of trees for fuel or other domestic use of the owner. The measure has the support of the Association for the Protection of the Adirondacks and other organizations. Senator Rebenoid of New York City, sponsor for the bill, says the legislation is imperatively needed because the forests are disappearing so rapidly that the native timber supply is perilously near its end. He cites a Conservation Commission report, according to which the forests are being cut five times as fast as they are produced.

The Fabricated Production Department of the United States Chamber of Commerce is distributing a pamphlet for executives on the subject of "Budgeting for Business Control." Copies have been sent to all members of this Association as well as to members of the American Paper and Pulp Association who requested them. A number of copies are still available and may be obtained by request.

John Blum has resigned as superintendent of the Paper Board Corporation of Tonowanda, N. Y. to go with the National Paper Products Corporation, Stockton, Cal. Mr. Blum was formerly with the Eddy Paper Company at Three Rivers, Mich.

Boston paper men have received with enthusiasm the appointment of Chester L. Whittemore as traffic manager of the New England Paper and Pulp Association. Mr. Whittemore, who succeeds Charles H. Tiffany, has been secretary of the organization for nearly nine years, as well as traffic manager for the S. D. Warren Paper Company. He is thoroughly conversant with New England paper rate matters.

The estate of the late Albert F. Hagar, New York attorney and paper mill executive, has been bequeathed to Miss Sarah B. Hagar, of Xenia, Ohio, a sister of the deceased. Miss Hagar, who has been operating the plant of the Hagar Strawboard and Paper Company at Cedarville, Ohio, since the death some months ago of her brother, will receive $180,000 under the terms of the will, and she also falls heir to a similar amount, under the will, which was bequeathed to another sister, Miss Mary Hagar, who died last July. Miss Sarah Hagar was quite wealthy in her own name before the bequests of $360,000 were received. She is conducting the Cedarville mills, in a modern way, a number of improvements made by her late brother just before he died, having been greatly to the benefit of the company.

The Men's Social Department of the Salvation Army is to have a social service building of 200 rooms in New York City which will be built largely from the proceeds of waste paper and discarded household goods. During a discussion at one of the sessions of the Salvation Army Congress in Washington last week it was pointed out that the average person who turns over a pile of discarded newspapers and other material for salvage has small realization of the constructive work that these materials are enabling the Salvation Army to accomplish.

According to a report of the Car Service Division of the American Railway Association, the week ending January 20 established a new record in the carrying of forest products. Loading during the week of 70,066 cars with forest products and of 495,901 with merchandise and miscellaneous freight, which includes manufactured products; established new records for the season, and in the case of forest products for all time previous.

Now New York State plans to raise $15,000,000 for the improvement of its parks and the conservation of its forests was explained to members of the City Club, New York City, last week by Major W. A. Welch, superintendent of the Palisades Interstate Park Commission. Major Welch told how a bond issue can be provided by an act now before the State's Legislature, and that in this way the people won't feel the slightest suggestion of an added financial burden. "The time is soon coming," said Major Welch, "when our timber lands will be more valuable than gold."

Mead, Patton & Co., Inc., is the name under which the business formerly known as J. F. Patton & Co., Inc. was conducted. The office of the Company is 342 Madison Ave., New York.

SOLD OUT

"Paper Testing Methods" published by the Technical Association of Pulp and Paper Industry has met with an unexpectedly large demand, and is sold out. A number of our readers have sent in orders that can not now be filled. Such orders are kept on file, and when 200 have accumulated, the book will be reprinted.

FORCE OF HABIT

"Phwat was the last card oi dealt ye Mike?"

"A sphade."

"Oi knew it. Oi saw ye spit on your hands before ye picked it up."

The Markets.

CANADIAN TRADE CONDITIONS

Montreal, February 12.— Reports by jobbers are to the effect that the paper trade, is, on the whole, in fair shape. While some firms state that business is slow, others say that it is quite satisfactory. Naturally individual firms experience considerable fluctuations, and when a dull week or two occur, there is an inclination to overlook the periods when orders came in at a good rate.

Taking the pulp and paper industry as a unit, there is a decided feeling of optimism. The outlook is good for a steady volume of business. At the same time many leaders favor a conservative policy in the matter of expansion, believing that the market polition is not sufficiently definite to warrant any large capital outlays. Costs of manufacturing and of raw material are on the up-grade, — a factor which may exercise considerable influence on the year's business.

There is very little to be said regarding newsprint. The demand is very good, and is likely to remain so for a considerable period. The American papers are just now carrying heavy advertising, and are also still making strong efforts to increase circulation. So far as Canadian output is concerned, the mills are still running at capacity. Price Bros. have now secured additional capital to go ahead with the program of increased output. An addition is being made to the mill at Kenogami, in order to house the machinery being made in England.

The call for books, bonds and writings is about maintained. Tissues and toilets continue to be freely bought, while the demand for wrapping paper is good. Boards are still in active request at the higher range of values. The paper stock section is very firm. Waste paper commands high prices, while there has been an advance in rags. Several buyers from the States have recently visited Montreal trying to pick up rags on the other side. Prospects for roofing felts are very promising; the mills are exceptionally busy, it being expected that their forthcoming building season will be unusually brisk. The orders in hand for felt are very large.

In the pulp and paper section, there is a tendency for groundwood to soften, due to better water conditions in the Watertown district. Buyers are looking forward to a drop in the market, as the spring opens up, and provides greater facilities for grinding. The labor deadlock in Sweden has resulted in prices of sulphite hardening a little. The trouble in Sweden has spread from the pulp and paper mills to the camps, where the men have gone on strike, and tied up the mills from getting their raw material for the coming season. If the trouble is not soon settled, there will be a shortage of wood, with the inevitable result of a considerable decrease in the production. This would probably involve a much larger demand for Canadian Chemical pulp, and a stiffening of values. There is now a steady flow of orders for bleached pulp.

Toronto Market News

Although the pulp and paper industry in Ontario is in a satisfactory condition and the mills are busy, there has been a slight falling off in volume of business from a distributors standpoint and some of them are inclined to term the market somewhat "spotty". However, the testimony of practically every one in the trade is that the year has opened up well and there is general confidence that even better business is on the way. Cable advices from Sweden are to the effect that the threatened lock-out throughout the pulp and paper mills of that country is now effective and all the plants are now closed down. It is believed that this is bound to have some effect on the market for pulp and paper and there is reason to believe that the demand for the Canadian products should be further stimulated as a result for some time to come. On the other hand considerable complaint is heard of the dumping of foreign goods on the Canadian market which is having the effect, in some lines, of unsettling prices in order to meet the competition. It would not be surprising if a downward revision of some lines would become necessary before long and in some quarters price adjustments are freely predicted. Some lines will likely go higher, however. New price lists of American houses that are coming to hand show substantial increases in bonds, books, writings, ledgers, blottings etc. and it is believed that Canadian prices will shortly be brought into line with the American lists on these and other lines.

PULP.— There has been a noticeable falling off in demand for sulphite and sulphate pulp which is only fairly firm, although the groundwood market is very firm with a strong demand. The fact that many of the United States mills have gone over to sulphite manufacture has lessened the demand to some extent and this condition is reflected in the Canadian market. There is a distinct scarcity in groundwood pulp and the situation in this respect is not expected to improve before the middle of March unless weather conditions permit of the getting out of supplies. Bleached sulphite is selling at from $80.00 to $90.00 per ton and unbleached ranges from $57.00 to $75.00 with sulphate at $60.00. Groundwood is quoted at from $46.00 to $47.50.

LIGHT WEIGHT PAPERS.— Tissue and toilet paper manufacturers report the mills running fairly full with a well sustained demand for their product. Some price adjustments are looked for soon, following a conference held at Montreal but no new lists have been put into effect as yet.

RAG AND PAPER STOCKS.— Dealers report the mills are calling for fair requisitions of paper stocks, chiefly low grade waste papers although the rag stock market is not quite so active as it has been.

WRAPPING PAPER.— Wrapping paper mills and manufacturers of paper bags are fairly busy, although the wholesale and retail departments of the trade are somewhat quiet. There is a fair general demand for wrappings but no big orders are being placed and some houses have cut down their selling staffs for a short period until business improves. There is nothing like a slump in the trade — just a temporary lull of selling which may have been caused by the "grip" wave.

COATED PAPER.— Manufacturers of coated paper report considerable enquiries for coated stock and satisfactory sales. Most of the mills are busy with orders ahead and the outlook for business is considered good. A meeting of representatives of the coated paper trade was held in Toronto last week and price adjustments were talked over but as far as can be learned no drastic alternations have been made in the price lists.

NEW YORK MARKETS

New York, February 10 — (Special Correspondence) — Reports almost as a unit continue to tell of much activity in the paper industry and of pronounced firmness in prices of practically all kinds of paper and board. Demand is developing at a very gratifying rate; consumers are coming into evidence as buyers in a regular way and are not hesitating to place orders for sizeable amounts of paper, and, viewing the situation in its entirety, there is no doubting the fact that the aggregate movement of supplies from mills into consuming channels is gradually reaching larger proportions. Jobbers in New York say that the market is in a very lively and healthy condition. Most of the reports received locally are to the effect that demand for paper is above what has been regarded as normal heretofore.

No further changes of importance in prices have been recorded this week. The trend in nearly every instance continues upward, and there have been some few cases where slightly higher quotations have been named, but market levels on the whole remain as about last reported. There is nevertheless a strong tone to prices. Most paper mills are sold well ahead and are not hesitating to demand premiums for prompt shipments of their product, while consumers do not appear reluctant in paying the difference when in urgent need of supplies. Jobbers appear to be fairly well stocked though it is plain that very few of them are carrying usual amounts of paper on their shelves and in warehouses. One reason for this is that demand has been so active that paper merchants have found little time to augment their stocks, it being necessary for them to deliver paper to customers about as quickly as it was received from mills. Moreover, unfavorable transportation conditions during the past few weeks have hampered the movement of paper from manufacturing centres to the cities, which also has served to reduce jobbers' stocks.

Wrapping paper manufacturers are reported enjoying a brisk demand for their product in spite of the heavy importations of kraft papers from Europe in recent months. Most mills in this country are said to be sold ahead for some four to six weeks, especially on kraft wrapping, and to be in a rather independent position regarding additional business. This seems proved by the fact that quotations on wrapping paper have strengthened of late. Most domestic producers now ask 7 cents a pound f.o.b. mills for No. 1 kraft wrapping, or about 7.50 cents New York, which prices represent an advance of fully half a cent per pound from the levels prevailing not long ago. It is admitted that nearly all of the large paper jobbing concerns in New York are now handling imported kraft wrapping paper, but it is stated that prices on this paper are within close proximity to those ruling on domestic paper of the same description, any difference that exists being a quarter of a cent per pound or less. Furthermore, importers are experiencing considerable difficulty with regard to the duty on this paper, the tariff being an ad valorem one, and the custom officials in frequent cases figuring the duty on the basis of the value at the time the paper is landed at American ports instead of at the time orders are placed abroad. Trouble along this line is said to be discouraging a good many paper houses which are importing wrapping paper from Sweden and Germany.

Newsprint remains firm and there has been no let up in the movement from mills to consuming centres other than occasioned by transportation delays. Consumption continues heavy, and with the pre-Easter season not far distant when advertising in the daily newspapers usually is at the high point of the year, it is likely consumption of newsprint not only will be fully maintained at recent levels but that it will show a gradual increase during the next few weeks.

Demand for box boards has slowed down a trifle. It appears as if consumers have covered their major requirements for a time and therefore are proceeding more cautiously in placing additional orders, but this development has not affected mills to any great extent for the reason that most board producers have their files well filled with orders and have nothing to worry about for a month or longer. By that time it is more than probable the pre-Easter rush will be on, which is the busiest time of the year for the board trade.

Quotations on plain chip board range around $65 per ton f.o.b. New York, and on news board at about $70. There have been reports of manufacturers accepting some orders at slightly below these prices, but this has been the exception rather than the rule. Binder board is quoted at $90 to $95 a ton and is in good demand.

Fine papers are firm at the recent advance. If anything, the increase in prices served to stimulate buying, and mills in the Holyoke district are reported very busy. Tissue papers are in steady call, particularly the coarse grades. Book papers are firm and in increasing demand. Contract business is of sufficient volume to keep most manufacturers engaged, and surplus output is meeting with a ready sale to transient buyers.

GROUND WOOD. - The mechanical market is firm and active but no fresh feature has developed. Consumers are freely absorbing supplies, and about all the pulp put on the market is quickly moved at firm prices, with reports telling of consumers having some trouble in securing spot shipments. Producers are disposing of mechanical pulp in a cautious manner. Most of them are watching their own requirements and are taking care to see that they themselves are well covered, with the result offerings of ground wood are not of average volume today. From $45 a ton upwards at grinding plants continues to be the market level. As high as $48 and $49 is said to have been paid in certain cases where a low freight rate from producer to consumer has been involved, but the bulk transactions are mostly at the lower price.

CHEMICAL PULP — The weakening factor in chemical wood pulp is the stocks of foreign pulp which some importers have on docks or in warehouses which they are anxious to move because of storage charges or for other reasons. It is not unusual at present for importing concerns to offer out certain lots of pulp at prices representing a considerable concession from the figures recognized as approximate market levels, and the result is that papermakers look for pulp at shaded prices and that sellers invariably find it necessary to grant the concessions demanded to move stocks.

Fundamentally, the wood pulp situation appears firm. With production in Sweden practically at a standstill, it is to be expected that the effect of this cannot be otherwise than bullish on the American market in due time. Moreover, consumption in this country is heavy. Newsprint, book, writing and other paper mills and board manufacturers are using pulp at a voluminous rate, and give promise of continuing to do so for some time to come. However, it is unlikely for the market to adopt a really firm tone until the supplies now in weak hands are liquidated; in the meantime consumers are profiting by securing pulp at prices which are substantially below replacement costs at primary sources.

RAGS. — Papermaking rags of all kinds hold firm in price and are favored with what is regarded as a splendid demand. High grades and low grades are moving in good quantities, and thus far there is no indication of the easing off of values which invariably develops as the spring draws near. New cuttings are stronger. A strike of clothing workers in New York is said to have reduced the output of cotton clippings of nearly all kinds, and dealers consequently are demanding higher prices for stocks in hand. New No. 1 white shirt cuttings are quoted at a minimum of about 12.50 cents per pound f.o.b. New York, light silesias at 8 cents, blue overall cuttings at 7 cents, washables at 4.75 cents, bleached canton flannels at 10.25 cents, and unbleached muslins at 10.75 cents. Roofing rags maintain their price position. Sales are reported at around 1.45 cents a pound f.o.b. this city for No. 1 packing, and 1.35 cents for No. 2 packing, while foreign roofing stock is said to have brought up to 1.60 cents New York for the No. 1 and 1.55 cents for the No. 2 grade. Old whites are firm and are moving freely, and there is a steady call for thirds and blues.

PAPER STOCK — The feature in the old paper market is the slightly easier position of low grades. Despite a continuance of good demand from board mills, old newspapers and mixed papers have slid off several dollars per ton and current quotations are around 1.50 cents a pound f.o.b. New York for folded news, and 1.20 cents for No. 1 mixed paper. High grades hold their own in price. Dealers quote 4.25 cents or higher for No. 1 hard white shavings, 3.75 cents for No. 1 soft white shavings, 2.90 cents for ledger stock, 2.40 cents for No. 1 old kraft, and 2.65 to 2.75 cents for heavy No. 1 old magazines.

OLD ROPE AND BAGGING — The market for old rope continues to strengthen. Demand from paper mills for this commodity is brisk and dealers assert that there is not enough rope coming forward from producing quarters to cover the wants of buyers. Domestic manila rope has sold in excess of 6.50 cents per pound f.o.b. New York, rumors having it that close to 7 cents has been paid by mills in some cases. Foreign manila rope is quoted at 6.25 to 6.50 cents and most importers ask the higher figure. Old bagging is steady but not particularly active. Roofing paper mills have bought in fair amounts lately at around 1.10 cents per pound at shipping points, while No. 1 scrap bagging is quoted at 1.20 cents.

FOR AERONAUTS

Circular No. 46 of the Bureau of Standards, Washington, D.C., contains much information on the testing of barometers and instruments for the measurements of altitude.

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With the Woodsmen

$2,000 IN CASH PRIZES IN AID OF FOREST CONSERVATION

Frank J. D. Barnjum, of Annapolis Royal, N.S., and Montreal, who recently awarded $5,000 in prizes for the best treatise on the most practical methods of preserving Canadian timber from further destruction by the budworm and other insect pests which have recently caused such great losses to our forests, is now offering $2,000 in prizes for the most convincing argument in favor of prohibiting the export of unmanufactured wood from Canada. One thousand dollars of this will be paid for the best argument written in the English language and $1,000 for the best in French, in the following manner:—Five hundred dollars to the winner of the first prize in each language; $250 to the second; $150 to the third, and $100 to the fourth. The competition is open to all residents of Canada. The essays must not exceed 600 words in length. The competition will close on March 15th and no entry will be eligible bearing postmark later than that date. Entries should be addressed to Frank J. D. Barnjum, New Birks Bldg., Montreal, Que.

Mr. Barnjum is a strong advocate of the policy of retaining Canada's timber supply in the country for the protection of Canadian industries and for the benefit of our own people and one of his purposes in instituting this competition is to start more people thinking and also obtaining Government action on what he regards as Canada's most vital problem, namely forest conservation.

DOUGLAS FIR OUSTS IMPORTED TIMBER

That Canadian Douglas fir timbers will bear a greater load before breaking than timbers of imported red oak, was stated by an engineer to the officials of a large Canadian corporation recently. The statement was received with an incredulity approaching derision by the hearers who were importing large quantities of oak for a certain purpose. The matter was referred to the Forest Products Laboratories of Canada (Dominion Forestry Branch), Montreal, who not only confirmed the statement from the results of tests already made but also carried out special demonstration tests in the presence of engineers and other officials of the company. The result was the adoption of Douglas fir in place of imported oak with an annual saving of many thousands of dollars to the company and a gain of trade for the lumbermen and railway companies of Canada. Research has evidently done something to bring the Canadian dollar to par.

CATTLEMEN NEED FORESTS

A country without State forests, scientifically managed, and plenty of trees on every farm is "bald headed and bone headed." People who are sensible of and morally responsive to their relationship to future generations, on or off the land, are actively interested in forestry. If trees of the right kind are planted, and forest scientifically developed and managed in areas which are better adapted to timber than crop production, they will be among the most valuable assets of the nation in twenty-five to fifty years. Men who know the facts, and have imagination and faith, regard forests as gilt edged investments, sure as anything humanly can be to pay large dividends in lumber, in pulp for paper making, in the use and saving of land, in the tempering of wind and weather, and in the clothing of the abused crust of the earth with a stately and refreshing beauty.—Breeder's Gazette (Chicago)

SOME HIGH SPOTS IN RECORD OF THE CANADIAN FORESTRY ASSOCIATION

During a twelvemonth when voluntary organizations all over America have been reporting deficits and slumps, it is somewhat of a relief to read in the report of the Canadian Forestry Association for 1922 an unbroken record of strong advances, increased revenues from voluntary sources and enlargements of all forms of educational propaganda in prevention of forest fires and the advancement of tree planting.

The Canadian Forestry Association is not connected with any government or commercial interest although backed financially by 150 agricultural, mercantile and wood-using industries and by most of the governments. The Association's policies are governed by a board of 56 directors, including newspaper editors, bankers, forest engineers, lumbermen, paper company presidents and other related interests.

That forest protection in Canada is an imperative national need is perhaps better recognized than the companion fact that forest protection is all a question of public sentiment. The weakness in public forest policies can be traced directly to weak public opinion. The Canadian Forestry Association's chief business is to make the Canadian citizen an active and enthusiastic partner in the protection and proper handling of his country's forest resources. There a parallel enterprise to which the Association devotes much effort, that of encouraging farmers in the southern prairie districts to establish shelter belts about their homes and farms. This may seem a sentimental proposition until one realizes that crop protection, the prevention of soil drift, the conservation of moisture, and last but not least the improvement of human environment on the prairies cannot be effected without wholesale planting of trees.

Some newsy facts from the Canadian Forestry Association record of public service are presented in the following digest:

Our Publicity Bureau secured 100 to 150 columns a week in 400 Canadian newspapers. This space was devoted to forest protection, certain phases of public forestry policies to tree planting on the prairies.

Five special writers are used by the Association to prepare newspaper material.

Five hundred and eighty-four public meetings were held by Canadian Forestry Association lecturers, with a total attendance of over 20,000 persons.

The Forest Exhibits Car travelled 12,625 miles, covering the smaller communities of maximum forest fire hazard, and secured an attendance of 219,000.

The Tree Planting Car, working on the southern prairies, travelled approximately 8,000 miles and in the small farming communities drew 51,975 persons.

The Young Canadians Forest League was instituted with a working alliance with 120,000 boys.

The income of the Association increased by 24 per cent. or $11.483 to $59,320.

Government grants advanced from $15,050 to $17,150. Special subscriptions from private firms and individuals increased by 32 per cent, or from $14,188 to $18,782.

The foregoing statistical facts do not touch more than the fringe of the Canadian Forestry Association's activities. A total of twenty educational campaigns are constantly in action reaching, it is estimated, **over 300,000 people a day.**

PROTECT FORESTS BY WAR RADIOS

It was shown by Major W. A. Steel, M. C., of the Royal Canadian Signalling Corps, Ottawa, in the course of an address to the Montreal Branch of the Engineering Institute of Canada, that the arts of aircraft and radio telegraphy and telephony as applied to war work could be utilized in peace time with surprising value and efficiency to defend our national resources against attacks by fire and other perils. Major Steel was lecturing on "The Employment of Radio Telegraphy and Telephony in Connection with Forest Fire Control," and in the course of his address he showed how men could be trained for war service in this line while actually performing valuable service in the prevention of forest fires.

This phase of its work, he said, had been actively taken up by the Department of National Defence, with which the Militia Department was connected. In this way the war training in peace times was no longer a non-productive business, but was productive of the greatest value to the national interests.

Major Steel described work he had undertaken with the Royal Signalling Corps and four military airplanes at the forest reserves in Alberta, over a section of thousands of square miles in the Bow River District last season. They had first designed adaptions of radio telegraphs and telephones for use in the airplanes, to signal direct, either by code or conversation, with two ground stations, where their reports were received, and reserves kept to immediately attack any forest fires that might be discovered. Four airplanes had been used in this work, two to each station.

These airplanes had during the three summer months covered a total of 90,000 miles and made 300 flights. As a result of their studies of conditions from the air these flights had proved 90 per cent. effective. That is during 90 per cent. of the time the machines were in the air they were able to make radio reports every 15 minutes to the ground stations.

As a result it had been found that the Alberta forest reserves had suffered very little from forest fires, while the nearby British Columbia forest reserves had suffered fire losses to the extent of millions of dollars. Major Steel said experience showed that if a forest fire was not discovered and dealt with within two hours of its start it was invariably beyond human control. It was by the immediate discovery and prompt attack through aircraft and radio that these losses had been prevented, they being able to send exact and speedy information as to the location of any incipient fire.

So successful had these experiments proven, said Major Steel, that British Columbia, Ontario, Quebec, and all the Canadian forest provinces had asked the Government to undertake similar protective work for them next year.

There was a large attendance, and Major Steel's address, which was illustrated with lantern slides, was much appreciated. A vote of thanks was made by the chairman, A. C. Tagge, and Mr. Stewart Rutherford.

ST. MAURICE FIRE LOSSES HEAVY

The Pulp and Paper Companies in the St. Maurice Valley are the largest contributors to the operations of the St. Maurice Forest Protective Association. Included in the members are the Brown Corporation, Laurentide Company, St. Maurice Lumber Co., St. Maurice Paper Co., the Belgo Paper Co., Wayagamack Pulp and Paper Co., Union Bag and Paper Corporation and the Manuan Pulp and Paper Company. According to the usual report, just issued, the past season was a disastrous one, and Mr. F. I. Ritchie suggests that the Provincial Government should amend the forest laws so that prosecutions made by the association would insure offenders being more severely dealt with. The directors intend to extend the system of clocks, and to install several wireless telegraph stations. Mr. H. Sorgius, the manager, reports that the fire risk is becoming greater every year, owing to the fact that logging operations are extending further into the forests, necessitating the employees travelling over more forest area. He suggests that the law be amended so that all males between 16 and 65 be obliged to help extinguish fires when called upon by the fire ranger without receiving any remuneration for his services; also that the Provincial Government appoint a justice for the Association's territory in order to give judgment on offenders of the forest laws. The largest number of fires was caused by fishermen, employees coming next. The acreage protected is 8,981.

Mr. Royal E. Terhune has been placed in charge of the Northern New Jersey sales territory of the Uehling Instrument Company, Paterson, New Jersey manufacturers of CO_2 recorders and other power plant equipment. Mr. Terhune was formerly associated with the Uehling Laboratories, and is, therefore, well qualified to co-operate with power plant operators on the important subject of power plant economy.

Mr. H. J. Mero who has been with the Trussed Concrete Steel" Company of Canada, for the past fifteen years in the capacity of Works Manager has recently been appointed Vice-President and General Manager.

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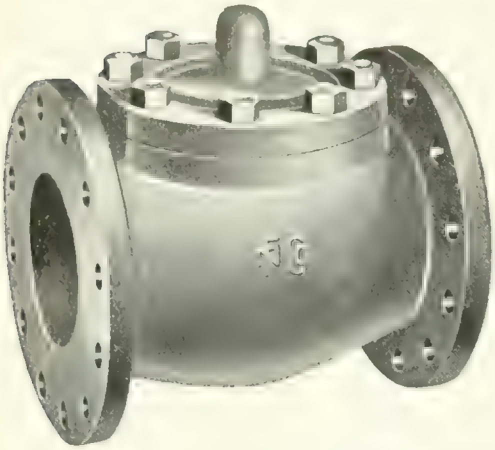

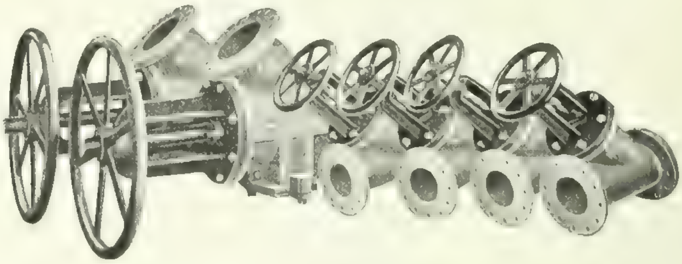

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI GARDENVALE, Que., February 22, 1923. No. 8

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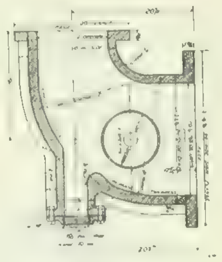

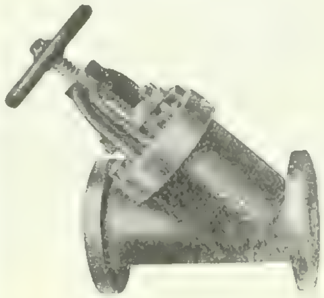

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:-: EDITORIAL :-:

SVENSKA CELLULOSA FORENINGEN

Through a curious misreading of one word in a communication from Sweden, it was erroneously intimated that the Swedish Cellulose Association is dissolved. The last paragraph in the first column of page 166 (Feb. 8th issue) of the Pulp and Paper Magazine should read:

"Advice from Sweden informs us that the Scandinavian Cellulose Association has been dissolved."

We are informed by the Swedish Consulate General in Montreal that the Svenska Cellulosa Föreningen is very much alive, though somewhat harassed just now by labor troubles.

THE ONTARIO SCHOOL ACT

A friend once won a Ford car on a raffle, and the poor thing had to stand out in the rain and sun for weeks before the owner could provide it with suitable accommodation. A somewhat similar boon has fallen to the youth of Ontario in the adolescence school act, which was recently passed in Ontario. As has already been stated in this column, we consider it highly commendatory on the part of the Ontario Government to desire and urge the young people of the province to continue their education beyond the local public school. The same remark has been made in connection with educational legislation in the province of Quebec, but we have also pointed out the possibility of a mis-step by requiring the young people to obtain something that there is no provision for them to get.

In the Ontario Legislature just this last week, a member called attention to this very fact in pointing out that in rural communities it was impossible for a boy to continue his education up to his sixteenth year because there were not provided sufficient school facilities for him to do so. It was further pointed out that failure to provide such facilities was making law breakers of the citizens of the province by virtue of a law which could not be obeyed. Other inconsistencies and burdens of the Act were brought out during the discussion.

It was contemplated when the law was passed that there would be provided in every community and extension school especially adapted to the activities of the district or the community. This would mean that an industrial community based on the Iron and Steel business would have classes dealing with appropriate subjects, and that a Pulp and Paper Mill community would have Pulp and Paper courses, a Textile community would have courses dealing with the Manufacture of Textiles and the Farming community would be provided with a school giving instruction in Agricultural subjects. It is comparatively easy in an ordinary sized community, built up around an industrial centre, to provide night classes, part time schools, etc., for the teaching of such subjects as are of interest to the people of the community, but when it comes to an agricultural community, there is the great difficulty of new settlements and long distances between people and the distance that must necessarily be overcome by those who would come from the farm to a school house for studying the prescribed curriculum; then too, there is some difference in the kind of agricultural work which is done in various communities, so that a standard course, covering the whole field, could not very well be prepared.

It was argued, in the Ontario Legislature, that the majority of farmers could not afford to send their fifteen year old boys to school in the summer. To them, there is a certain economic loss, or at least expense. In the first place, the farmer must pay taxes to support the school activities. In the second place, he must buy textbooks and probably somewhat better clothing than the boy would probably wear around home, and in the third place, he is deprived of the assistance of his boy while he is attending school. Now we do not wish it to be understood for a moment that we are in favor of having a boy quit school if he has the inclination, ability and means, or ambition, to continue his studies in a distinctly educational atmosphere, but we do wish, clearly, to advocate that a good fundamental education in the public schools be insisted upon and provided for, free of all expense to the individual, other than such as falls to him as a part of his burden of government. We wish to recommend that, instead of pursuing studies of an extraneous character, the boy who intends to follow an industrial career, whether it be in a factory or on the farm, should be encouraged to study those subjects which are fundamental to his daily work and which will help him to do it with the greatest ease and efficiency. To be able to do one's work efficiently means that the doer of it will perform his duties with greater pleasure and far greater satisfaction.

There are some who will argue that the study merely of one's work or profession is not really getting an education, but as has been shown by experience time and again the person who does study his job, does get a real education, not only through the acquisition of a knowledge of his daily work, but through having formed the habit of study, and he goes on and studies other subjects which are of general interest and reads literature of value. Home study courses are available on almost every subject, and for almost every situation. The United States government, for instance, has prepared home study courses in subjects dealing with farm life. The difficulty inherent, however, in simply passing out literature of this kind for home study is, that a person either reads it in an intermittent hit or miss fashion, or does not read it understandingly. But let the study of such literature be directed either by instruction through correspondence or by community classes. The work is done in a better manner and is sure to bring satisfactory results. The trouble is that the reading that most people do is ineffective due to its being too miscellaneous, and misdirected. In other words, most reading is not organized to a definite end. A correspondence course is organized reading, with examination questions to check up the degree to which the information has been absorbed, to test the development of the thinking power of the student, and to furnish him with a source of assistance when difficulties arise in the course of his work.

At the last annual meeting of the International Union of Press Men, it was recommended that an apprentice be required to take a correspondence course in Printing. It is our belief that every boy on the farm is an apprentice farmer, and every boy who enters a shop or office is an apprentice in that business. The local school cannot be expected to provide special courses particularly adapted to the various lines of industrial work, but such instruction can be given through correspondence courses. The boy or girl can thus grow up with the distinct advantage of remaining under home influences, and in practically every case, better progress will be made than in the case of the school pupil where there are so many distractions. Furthermore, with the cost of education per student assumed as $50 per year for high-school courses, we are confident that the essentials of a high school curriculum, with emphasis on citizenship, and a specialized curriculum along the line of the work of the boy or girl, can be provided at a lower cost. Nova Scotia has been working along these lines and it would seem as if this is the solution of the problem of providing an opportunity for every person to get an education and a reason for requiring him to do so.

Digging wells is about the only business where you can begin at the top.

Have a heart that never hardens, a temper that never tires, and a touch that never hurts.
—Charles Dickens

INADEQUATE FIRE MEASURES

The report of the Haileybury fire of last October by fire-marshal E. P. Heaton, states that the financial loss is $6,369,126 with $2,883,832 covered by insurance. The loss of life was 44. Mr. Heaton seems to think that it is all right for the Provincial authorities to remove or withdraw fire rangers from a municipality which request such action. He recommends that fire guards be prepared as a protection to settlements. It seems that the greatest danger in that country lies in the layer of humus which covers the clay soil for several inches, and which carries a fire very rapidly. A fire break can be made by plowing to the clay and seeding the strip so as to present a green barrier to the advance of a threatening fire.

The fire warden's report may be all right as a matter of history, but we don't think much of the paucity of his recommendation. We can't quite understand how a man who has been through that experience will put in a report that does not make a strong recommendation, even going so far as making a demand that the disposal of slash be made in a safe and satisfactory manner. If the people of that country are going to be permitted to continue to burn slash and other debris under any and all conditions, and without taking any precaution whatever, there will be periodical recurrances of these disasters in that country. Northern Ontario is enormously rich in agricultural and other resources, and is fairly teeming with possibilities for development, but if Ontario wants the country settled, the government will necessarily have to take some active measures that will serve as adequate protection to her settlers. One of the greatest assets of a village or city is its police and fire protection. There should be a similar degree of security for those who have the hardihood to settle a comparatively unbroken country; it is not hardihood, however, but rather fool hardiness to settle in a district which is periodically swept by a disastrous fire that wipes out, not only the work and savings of a life time, but endangers the lives of the inhabitants.

REVISED CLASSIFICATION OF PAPER

The revised classification and tentative definitions of some two hundred kinds of types of paper have been submitted to a large number of organizations and individuals, who are co-operating with the Paper Division of the U. S. Bureau of Standards in this work, for criticism. This classification is so arranged that each type of paper may be given a code number and thus permit of mechanical devices for tabulating statistics. Some of the definitions have already been changed to meet the suggestions which have been received but it is hoped that additional criticisms will be received. This work is part of the progress on standardization of paper and it is hoped that definitions of terms will assist in eliminating misunderstandings in commercial transactions with paper. Some eight hundred supplementary definitions are also being prepared.

Use of Rubber Latex in Paper Making

Investigations into the use of rubber latex in the manufacture of paper have been undertaken by the Paper Section of the Bureau of Standards Department of Commerce, U.S.A., and the results are tabled by Mr. Merle B. Shaw (associate technologist), and Mr. Geo. W. Bicking (papermaker).

The source of the rubber latex used in the work done by the Bureau of Standards was from the 500 gallons of latex coming from the East Indian plantations to the United States Department of Commerce through the assistance of Mr. Kaye.

The most convenient method for analysing rubber latex for mill information is as follows:—First determine weight of 5 cm. of latex as delivered from a 5 cm. pipette. To 200 cm. of distilled water in a beaker add 10 cm. of dilute acetic acid (125 cm. glacial with 300 cm. water), bring solution to a boil, then add 5 cm. of latex from pipette drop by drop into the boiling solution, stirring continuously. Filter through a prepared weighed Gooch crucible, wash with warm water until free from acid. Dry it at a temperature of about 70 degs. F. and weigh as rubber.

Papermaking Equipment Used

The experimental papermaking equipment available for this work consisted of a 50-pound wood tub beater with iron bars and plate; a 4-plate screen and a 29-inch Fourdrinier machine with wire 33 feet long, having two presses, nine 15-inch dryers, a small machine stack of 7 rolls and a reel.

Book Paper

The raw material used in this work was commercial bleached sulphite and soda pulps. The first thing done was to make a book paper without latex in order to establish a method of handling stock in the beater and on the machine; also, to have a paper to use as a basis for later comparisons when using latex or any other material which might change the quality of the paper. The weight adopted as weight of paper to make was a 20-pound paper on a folio basis.

The percentage of pulps used in book paper runs was 50 per cent. sulphite and 50 per cent. soda with 3 per cent. of size figured on the total weight of pulp. Alum was added and in every case the stock in the beater was acid to litmus paper. The length of time the stock was in the beater was from four and one-half to five hours. This time allowed for the handling of roll carefully and leaving the fibres with all possible strength, yet being in proper condition to give a well formed sheet of paper on the machine.

The machine treatment, or handling of paper machine, was constant or as nearly so as possible, the stock and how it performed on the wire being the guiding point. The speed at which the machine was run in nearly all cases was between 40 and 45 feet per minute.

The following tests were made on the different papers: Weight (25 x 40-500), weight (17 x 22-500), bursting strength, thickness, ratio of bursting strength to weight (25 x 40-500), breaking strength, elongation, tearing strength, folding endurance, per cent. of ash, per cent. of rosin, per cent. of rubber, number and identification of specks, and sizing quality. The method of making these tests are given in Bureau of Standard Circular No. 107, except the methods used in determining rosin, rubber and sizing quality of the paper. These methods as yet have not been standardised. Great difficulty has been encountered in getting a complete extraction of rosin and rubber from the paper and a separation of the two materials. The work of developing a method is still in progress. The sizing quality of the paper was measured by the curl and Stockigt methods, more as a comparative test, but in a modified form. From data thus collected it was hoped comparisons could be made and effects due to the addition of latex noted.

Adding the Latex

After making the first run of book paper and establishing the best method of treatment in the beater and on the paper machine, the question of using latex was taken up. The first method of handling was to add diluted latex a short time after furnishing the beater, since one claim made was: "Where the paper is machine sized the latex may be added before, or after, the size and alum, the condition being that sufficient alum is added to throw out the size and rubber completely." This would allow the latex to become intimately associated with every particle of the beaten fibre before the addition of size. It was thought by following the latex with size that not only the fibres but also the small globules of rubber would be surrounded by the size, and then when thrown out or precipitated with alum there would be a greater sizing effect and retention of the rubber in the paper.

The latex for this run was diluted with twenty times its weight of water and filtered through a fine cloth. (The cloth as a filtering medium was not very satisfactory, gumming or filling up of pores making it necessary to wash the cloth many times. After having the rubber technologists of the Bureau examine the latex it was thought desirable to use a 100 mesh screen. This was used in all other runs.) The filtered latex was added to the beater one-half hour after starting up, but not until the stock had been tested for acidity and alkalinity. The stock being neutral, the diluted latex was added very slowly, so as to get a thorough mixing almost at once. The size was added fifty minutes after the latex. Before the alum was added the stock was examined, and small particles of coagulated rubber were noticed, especially in the stock rolling up in back of the beater roll shaft. Some time after the alum had been added, larger particles of rubber were noticed, but it was decided to continue and make the run.

During the run rubber particles were found in the screened stock, press rolls became sticky, and dryer rolls, especially the first roll, were covered with rubber. The calender rolls also became sticky, and the number of rubber particles gathered on them marked the paper badly, giving it a pitted appearance. The strange thing about the run was that the rubber apparently did not stick to the machine wire or felts.

The whole system was then thoroughly scrubbed and cleaned, after which many runs were made and different factors changed. The method which gave the best results under the conditions was adopted. This was as follows: The stock for the machine was prepared, including the size, and then, just before dropping it to the chest, the beater roll was raised and the diluted latex added. The latex, diluted with water one to thirty (making dilution approximately 1 to 100 when figured on rubber content), was screened through a 100 mesh screen, and added to the beater very slowly, fifteen minutes being allowed for this process. Five minutes after having added the latex the alum was added, and five minutes later the stock was dropped to the chest. The time elapsing before the stock went on the machine was about fifty minutes, during which time the stock was continually being agitated in the machine chest. The above treatment allowed sufficient time for a complete coagulation of the rubber.

Machine runs were made using latex enough to give 1 per cent. and 2 per cent. of rubber, figured on the stock. There was no difference noticed in handling of the machine in making these runs, except that the couch and first press rolls became more sticky when running stock containing 2 per cent. rubber. The material collecting on the first press roll was not removed by the doctor, this condition making the surface of the roll rough, which is against all good mill practice. Some of the material was scraped off the first press roll, and after air drying an analysis of it was made. A double extraction on the material was made, first with acetone and then chloroform. The results showed that 60.5 per cent. was soluble in acetone and 11.5 per cent. was soluble in chloroform. (Resins are soluble in acetone and rubber in chloroform.)

The test data collected on the different runs did not show any definite improvements in paper to which latex had been added. The differences were those ordinarily found in any paper. The bursting strength varied one point or more; sometimes the run without latex would test higher than the one with latex and "vice versa." Tearing strength, folding endurance, breaking length and elongation showed the same conditions as bursting strength. However, the paper having latex in it seemed to be better sized and to take a better finish.

The following statement made it seem advisable to make runs using clay in paper, with and without latex: "It is apparent that the loading matter, such as china clay, will be better retained in a latex paper with lessened loss in the backwater." One run was made without latex using 20 per cent. clay figured on the pulp. The paper had an ash of 10.3 per cent. Another run was made using the same amount of clay but in addition enough latex was added to give 2 per cent. rubber figured on the total weight of pulp and clay. This paper had an ash of 10.4 per cent. These two percentages show that there was no increased retention of clay due to the addition of latex.

Paper containing latex after being made and standing a few days had an odour which would be objectionable to users of papers. One machine run was made having machine broke from other runs for stock, the furnish being 60 per cent. paper with latex and 40 per cent. paper without latex. The finished paper was a very good sheet, having only a few more rubber specks than other paper containing latex.

In this investigation no attempts were made to study the effects of Jordaning the stock, the use of white water in furnishing the beater, or recooking paper containing latex.

Wrapping Paper

The raw material used for wrapping paper was commercial unbleached sulphate pulp. The handling of the stock was the same as in book paper runs except that a longer time for beating was necessary. This time was established by making a run without latex. The increased length of time in beating gave a real "slow" stock, and when latex was used with it, the paper seemed to handle better on the machine than the book paper runs containing latex, in that it did not stick to the rolls.

Machine runs were made using latex enough to give 1 per cent. and 2 per cent. rubber figured on the stock. The same physical and chemical tests were made on wrapping paper as on book papers.

The test data collected showed that there was no definite improvement in the paper containing latex over that without latex.

Writing Paper

The raw material used for writing paper was old cotton towels, cooked in our small rotary cooker, washed and bleached.

One run was made without latex, with size and handling similar to book paper runs. The finished

Test Data

	Book Paper					Wrapping Paper				Writing Paper	
	Blank a	1% Rubber b	2% rubber a	Blank with Clay c	Clay and 2% rubber c	Blank c	1% rubber c	Blank d c	2% rubber d c	Blank c	1% rubber c
Bursting strength — points	17.7	18.4	20.2	15.2	14.4	50.0	47.4	41.1	54.0	17	19.2
Ratio [illegible] to wgt. 25x40 [illegible]	31.6	32.7	35.9	24.5	24.1	86.7	81.6	94.1	95.5	28.5	32.5
Breaking length, yards:											
Machine	3,739	3,666	3,884	3,202	2,795	7,620	7,712	8,789	8,143	3,186	3,556
Cross	2,230	2,069	2,445	1,711	1,821	4,280	4,217	4,133	4,568	2,075	2,175
Tearing strength, grams:											
Machine. . . .	35.8	36.6	37.4	35.5	36.7	94.6	96.2	83	68.7	53.6	50.0
Cross	36.9	40.4	38.4	36.6	37.2	92.2	90.4	92	80.4	49.8	51.7
Folding endurance, double folds:											
Machine. . . .	7	6	10	4	4	3,447	4,013	3,140	3,837	12	16
Cross . . .	5	5	6	3	3	3,190	3,449	2,473	2,950	7	10

a—Average of two runs and retests.
b—Average of three runs and retests.
c—Average of test and retest on one run.

d—The beater treatment in these two runs was the same, but different from the first two runs on wrapping paper.

paper was not very strong and it was thought hardly worth bothering with but the following statements made it seem advisable to give it a trial: "A paper may be too weak or made largely of waste paper; here rubber latex will give necessary strength." Consequently a run was made with enough latex added to give 1 per cent. rubber figured on the stock.

The latex in this run was mixed with the size solution (and diluted with water to give a ratio of 1 to 30) before being added to the beater. The reason for this was that in many cases sodium resinate soap has been found to make colloids more stable.

The results of this run were satisfactory in that the paper was a well formed sheet, with very few rubber specks, better sized and having a good finish. The disappointment was that there was hardly any increase in the strength of the paper over the run without latex. Whether the improvement can be credited to latex is doubtful as an experimental error of testing or slight differences in the conditions of the stock could account for the above variations.

Conclusions

The test data seem to indicate a slight increase of bursting strength on book paper. The variation of the other strength qualities seem to be within that of testing and of different runs.

PROVINCIAL PAPER PROFITS INCREASED

The Provincial Paper Mills, Limited, reports a slight increase in profits for the year 1922 as compared with the previous year, gross amounting to $729,261 as compared with $728,775 for 1921. Interest and dividends received totalled $34,700 bringing income account to $763,961 as against $761,395. After interest amounting to $55,787. net earnings of $708,173 are shown as compared with $727,845 in 1921. After allowing $150,000 for depreciation, contingency reserves and taxes, $70,000 and preferred dividends, $119,000, there remained a sum of $369,173 applicable to the common stock, equivalent to over 10 1-2 per cent. of the $3,500,000 common outstanding. Common dividends at the rate of 6 per cent., and a bonus of 1 per cent., amounting to $245,000 were paid, leaving the surplus profits of $124,173, which added to the balance forward of $709,295, brings surplus to $833,468.

Total assets are up from $7,611,569 to $8,662.519. Liquid assets are carried at $2,113,525, as compared with $2,305,160. Increases are shown in cash on hand, at $292,358 as against $158,926, and bills receivable at $75,776. Inventories at $1,017,245 compare with $861,382; current liabilities at $780,890 as against $476,160. Net working capital at $1,332,636 compares with $1,829.000. Fixed assets at $6,548,994 are up approximately $1,200,000, and embrace the Port Arthur plant.

President I. H. Weldon, in his report points out that the erection of the new mills at Port Arthur has progressed favorably. Equipment is being installed and operations should commence by March 1, or very soon thereafter. During the past year sufficient orders were received to keep the mills running practically full capacity, but the greater demand was for the lower grades, considerable of which was not profitable. At present orders on hand are in sufficient volume to keep the mills in full operation for some time, including the mills at Port Arthur.

The Chateaugay Pulp and Paper Company, of Chateaugay, N. Y., ordering 150,000 Norway spruce trees, gave the State of New York's conservation department the largest single order for trees for artificial reforestation placed during 1922.

INTERNATIONAL PAPER CO.'S OUTPUT DURING 1922

The International Paper Company in 1922 produced 433,809 tons of paper, of which 273,953 was newsprint and 159,856 paper of other grades. This compare with total of 205,114 tons produced in 1921 and 532,000 tons in 1920.

Normally, two-thirds of the company's output is newsprint and the balance chiefly higher grade papers. The 1922 figures show that newsprint was 63 per cent of the total so that production of higher grade papers was slightly above normal.

That while newsprint production in both United States and Canada was running at a record rate International's output was below normal is due chiefly to hampering of operations early in the year as an aftermath of the 1921 strike and the then uncertain outlook.

Production in tons for ten years follow:

	News print	Other Grades	Total
1922	273,953	159,856	433,809
1921	....	......	205,114
1920	300,000	232,000	532,091
1919	305,707	166,209	472,007
1918	315,112	157,556	472,668
1917	390,179	142,410	532,589
1916	373,263	160,229	533,492
1915	340,236	107,087	448,323
1914	379,810	98,058	477,868
1913	402,763	80.738	481,501

Newsprint production for United States and Canada is estimated at 2,500,000 tons last year, a record. International's output was slightly less than 11 per cent of the total.

Drastic curtailment of output in 1921 reflects the strike which went into effect May 1 and closed down mills entirely for more than two months. In July efforts to get back to production were made and mills began to reopen. Operations even into the early part of 1922 reflected the strike, which cost the company several million dollars. It was well into 1922 before operations got back to normal. Company is now freed from union domination. Up to 1921 strikes or threats to strike had come each spring when the union agreements expired.

Production is now back to normal capacity and output of all grades is running close to 1,900 tons daily, or at annual rate of above 580,000 tons. Low water has been hampering operations somewhat. This is expected to improve.

The first of its Canadian newsprint plants was completed about July of last year with an estimated capacity of 240 tons daily. It is now turning out 260 tons of print paper daily augmenting output by more than 70,000 tons annually. Normal annual productive capacity of all mills is estimated slightly above 580,000 tons at present.

To insure ample supplies of raw material International now has approximately $20,000,000 invested in its wood pile.

Mr. E. G. Ryley, formerly Manager of Western Branches of the Trussed Concrete Steel Company of Canada, Limited, has been appointed Manager of the Toronto Branch of that Company with offices at 34 King St. West, Toronto.

CANADIANS INTERESTED IN EXPOSITION

At the annual meeting of the Canadian Pulp and Paper Association, held in Montreal Jan. 24-27, an opportunity was afforded a representative of the Paper Industries Exposition to discuss the plans and prospects of the Exposition, which is to be held at the Grand Central Palace, New York, during paper trade convention week, April 9-14, 1923.

The speaker was, Mr. Thomas J. Keenan, former editor of "Paper," who is now connected with the staff of the Exposition and is a member of the Advisory Committee. Mr. Keenan said "the exposition was receiving the enthusiastic support of leaders in the industry and a well rounded and comprehensive exhibition of paper and paper products was assured.

"Paper machinery manufacturers were intensely interested in the exposition, and types of machinery, apparatus and equipment would be abundantly displayed.

"Spaces had already been reserved for paper converters as well as for the larger paper merchants and dealers in mill supplies and raw materials, so that it appeared certain that a complete exposition of paper manufacture in all its branches would be assembled."

Mr. Keenan asked for the interest and cooperation of the members of the Technical Section of the Canadian Pulp and Paper Association and extended an invitation to them to attend, saying the managers of the exposition would accord the privilege of free admission at all times during the week of the exposition to members of the Canadian Pulp and Paper Association.

He stated that plans had been formed for a meeting of the Technical Association of the Pulp and Paper Industry, which would hold a session at the Paper Industries Exposition on Thursday, April 12th, at which several special papers would be read and discussed. At the close of the sitting, the members would be conducted on a tour of the exhibits. The same course would likely be followed by others of the service associations of the American Paper and Pulp Association and the National Paper Trade Association which would be in session at their annual convention during the entire week of the exposition; Monday, April 19th to Saturday, April 14th. The exposition was being conducted, he said, in close cooperation with the officers of the national association, many of whom were serving on its Advisory Committee.

The Canadian government, through the Forest Products Laboratories, was interested, and the installation of an exhibit of its work in the utilization of the northern woods was possible, as well as a display of specimens showing the effects of insect attacks on wood, decay of wood by fungi, etc.

Meanwhile, space is being taken by a large variety of concerns interested in the various phases of the paper industry. The felt manufacturers have definitely decided to make an exhibit through their association, taking two booths for their display.

Although no fixed segregation of exhibits is being made, the choice of space so far made indicates that nearly, if not more than half of the space taken will be devoted to exhibits of machinery, chemicals and supplies for paper manufacturers, these exhibits being largely grouped on the north side of the Exposition hall. The converters are, as a rule, taking space near the center aisles, though some of the paper manufacturers are to occupy booths in this general region.

Sufficient space is being reserved to give every opportunity for all those in attendance to see the educational exhibits, which will be by no means an unimportant part of the Exposition.

One of the latest bits of news from the Exposition headquarters is the securing of another fine motion picture film to add to the list already promised.

The Chicago Tribune, which is itself a paper manufacturer, with extensive holdings of timber in Canada, and mills for the manufacture of its own paper, has promised a five reel film telling the story of the making of a newspaper, going back to the work of the lumberjacks in the pulpwood forsts. When in Canada, the motion picture operator taking the picture of the dynamiting of a log jam was within a few feet of a workman who was killed when the jam was broken.

Two writing paper manufacturing films have already been promised, one showing the making of paper towels, another of newsprint, in addition to the newspaper film, and others are expected to be scheduled. The motion picture program will be a part of the Exposition designed to interest the students of paper making processes, as well as the general public.

The Exposition management is arranging to cooperate with the American Paper and Pulp and National Paper Trade Associations, which have their conventions during the week of the Paper Industries Exposition, by admitting without charge all those members of either association who are registered as attending the conventions of these and their affiliated organizations. Details of these plans are not as yet worked out, but will probably be decided to admit free those who wear the badge of either association.

One of the most carefully worked out details of the Exposition organization will be the formulation of a program that will not interfere with the meetings of the paper manufacturers and merchants organizations during the same week, and still give all those attending the conventions an opportunity to spend considerable time viewing the exhibits. The paper manufacturers alone will have nearly twenty separate sessions in three days meetings, of the different affiliated associations, and the merchants will also have sessions continuing through practically every forenoon and afternoon of the week.

The tentative program, however, as now being worked out, appears to be so formulated as to combine the conventions and the Paper Industries Exposition in making the week of April 9th the biggest Paper Week ever known by the paper industry.

THE CONTROL OF CONSISTENCY

Interest in scientific control of the various factors in pulp and paper making has been illustrated of late by the developments of a number of pieces of apparatus for the control of the consistency of paper stock. One of the most successful of these devices is the trimbey automatic consistency regulator. It is interesting to note that the Trimbey Machine Works received orders in January for the following regulators: Dells Paper and Pulp C., 1; Wausau Sulphate Fibre Co., 3; Lorentzen and Wettre of Kristiania, Norway, 2; Provincial Paper Mills Ltd., 3; Brown Co., 2; Marinette and Menominee Paper Co., 1; making a total of twelve orders.

They are now working on Four complete Metering Systems for the Minnesota and Ontario Paper Co., consisting of Sixteen Meters, — Eight for Stock and Eight for Color and Alum and are also working on Two-Triple Metering and Proportioning Systems for the National Paper Products Co., of Stockton, Calif., consisting of Forty Meters, Twenty-Four Meters for Stock and Sixteen for Color Alum and Size.

Expediency is man's wisdom; doing right is God's.— *George Meredith.*

Why Men Strike*

The Remedy that Lies in Making Business a Profession

By EDWARD A. FILENE

In "Industrial Management"

The following article strikes us as unusually suggestive and stimulating. While we should, perhaps, find some difficulty in subscribing to all the propositions it lays down, it yet presents a viewpoint deserving of the close attention of all thoughtful citizens. The time to consider these question is when things are running peacefully, and there is a chance to make adjustment that will prevent any interruption of harmonious relations. —Ed. Pulp and Paper.

—Ed. C. T. J.

Why do men strike? Primarily because they instinctively dislike to be bossed. All men dislike to be bossed, employed and employee alike. They dislike it because experience has shown that no man is wise enough to have autocratic power over another man. Being mere mortals, at our best, we make mistakes; and if these mistakes affect other men who have to submit to them, they are liable to exaggerate them, and rebel against them. They believe that if the decision had lain with them the mistakes would not have been made.

Constructive criticism of a kindly nature is scarce. But the average man finds it easy to criticise the mistakes and evils in a thing. There is, therefore, a tendency on general principles to criticise and resist the employer. If the major part of strikes is to be avoided we employers must recognize that the inevitable and normal trend is this way. By careful study of the whole situation and wise, sympathetic organization we must meet the tendency.

Men strike because they are injured by real mistakes or because they believe themselves to be injured by the terms of their employment. In such strikes they are often unsuccessful and the grievances remain. For these reasons they sometimes dwell upon the objectionable features of their employment until they become tense and bitter. There grows up in consequence a distrust or hate of the whole system. Irresponsible leaders who voice and trade on this discontent easily get a following. There is also a reaction towards socialism or communism which are presented as panaceas for the ills that are complained of.

For many years I have studied carefully the relations between employer and employee, under our so-called capitalistic system. I have also studied socialism and communism as proposed substitutes for it. I am forced to the conclusion that as men are constituted at the present time socialism and communism are not practical remedies. I am convinced also that the greater part of the wealth of employers is legitimately gained and that all the world is richer because of their wealth. Henry Ford is not the only man who has become rich through serving the public. Many an employer's wealth has been, as Mr. Henry Holt has well pointed out.

"Derived from processes and economies of his own devising and directing without which his income would not exist at all and the income of his employees would be less."

But firmly convinced as I am of this truth, I am just as firmly convinced that the present wage system is not infallible or final, but is only a step on the road from serfdom and slavery to improved forms of just and effective cooperation that the experience and wisdom of men will evolve from generation to generation. But as the present system is the road that must for the present be utilized for the upward march of all of us, employer and employee alike, we employers will do well to study it carefully with the object of understanding its weaknesses and remedying its defects.

My study of industrial relations has convinced me of four things:

1. That in a political democracy such as ours the autocratic control of industry by employers is a fruitful breeder of strikes and is in the long run impractical;
2. That we often pay counterfeit wages when we intend to pay real wages, thus causing discontent, conflict and strikes;
3. That the present so-called capitalistic system has accumulated and is still using, outgrown ideas and customs that are needlessly offensive to our employees, and that it needs to be brought up to date;
4. That the basic remedy for the evils of industrialism and hence for strikes lies in making business a profession — that is, in realizing, in act as well as in thought, that a business has no right to make a profit except as it serves the community.

Let us briefly review these four conclusions:

All of us employers are believers in the right of private property. Almost all of us translate that faith, consciously or subconsciously, into conviction that our property is so completely our own that society should keep its hands off of it. We hold that if it must touch our property at all it should do so only to the slightest possible extent, and only after having first recognized and acknowledged that is was interfering with our rights. Of course any analysis of this position shows that it is not very sound. It amounts to setting up property rights as superior to personal rights; to an appeal to society to safeguard our selfish interests against the common interests of the society to which we appeal; to an insistence at times on the duty of government to protect us in our imagined and artificial rights to the detriment and loss of the whole group of citizens of which we are a part, and this view tends, unfortunately, to develop an autocratic spirit among us.

Applying this idea of property as exclusively our own to our relations with our employees, we probably feel that we have undoubted right to determine the conditions under which these employees shall work, provided we do it lawfully. And here we find one of the reasons why men strike — a source of grievance which can be shown to be the real cause of many strikes where other reasons are put forward. Most of our employees — all of those who have been educated in this country — have been taught from childhood that it is their inalienable right as freemen to have a hand in determining the political laws under which they live.

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* An address before The Economic Club of New York, May, 1922.

They have heard it reiterated by their teachers in the public schools and by the interpreters of our free institutions on every public occasion. They read it in the daily press.

Men so taught are not going to stop short of applying this axiom, that grows out of the political system under which they live and labor. Inevitably they are claiming the right to have an effective voice in the determining of conditions under which they work. These economic conditions are even more important to them than the political conditions. They have occasion for the expression of their political views at infrequent intervals. They are conscious of the exactions and burdens of government only now and then. But the urge to have an adequate voice in determining industrial conditions is daily, yes hourly, insistent. Every accident that is costly to labor, every additional expense in their living, every new baby, every new ideal, every new material desire such as an automobile or a house, serves as an occasion for reopening the question whether their wages are justly and generously determined. The result of such questioning is surely a further incentive in their minds to the greater assertion of their rights, as the preponderant human factors in industry, to have a voice in the control of conditions of labor and of the rate of wages. And this assertion of right, if opposed by employer, often means another strike.

Then to this is added the periodic recurrence of bad times, with its masses out of employment, and the fear of the loss of the job — one of the most terrifying apprehensions of the average working-man with a family. Under these conditions men feel themselves compelled to fight, by strikes or otherwise, for a greater voice in determining the conditions under which they labor. They are led on by the idea that if they have this greater voice they will so regulate and control production and distribution that not only will there be no fear of loss of the job, but there will also be sufficient wages to satisfy their needs and their desires.

My own life-long experience and study as an employer convinces me that autocratic control by employees would be even worse than autocratic control by employers. There is nothing in democracy that can perform miracles in production and distribution. There is nothing in the democratic principle in industry that in itself will take the place of expert knowledge, technical skill and trained industrial vision. No man in the factory, whether employer or employee, if he were hurt by a machine, would be willing to have a committee of his fellow-workmen meet and vote how badly he was hurt and how he should be cured. They would send for the trained, skilled specialist, the doctor or the surgeon. Likewise, when the business is hurt, it cannot be cured by a vote of management-sharing employees, unless those so voting are mentally and technically trained to know what they are voting about and are basically so interested that they will put their best into their decision.

It all comes to this, that autocratic control whether by employer or employee, is bad—the one almost as objectionable as the other; and that men are striking today as a protest against autocratic control by capital, and as the most effective way of expressing their demand for an adequate voice in the conditions under which they work. They are vitally interested. They will continue to strike until provision is made for giving them adequate representation in boards of directors or in those shop committees, by whatever name they may be called, in which employers and employees work hand in hand to advance both the business and the legitimate interests of the human beings who put their lives into it and get their livelihood from it. This is largely recognized by employers now and the growth of these joint committees has for some years been marked.

But even if joint-control of management is immensely successful, it will not alone remove all the grievances that make men strike. It is necessary now to examine into the second of our causes.

A large proportion of the industrial disputes and strikes are due to the fact of the employee receiving an inadequate wage without the direct fault of the employer. An industrial system that sub-divides the manufacturing process until the individual worker is only a part of the machine, and which then denies him participation in management, must of necessity leave him with little if any interest in the business. His main concern will then be in the wage return he gets for his work. Under such conditions, any interference with those wages that reduces their purchasing power, is a serious matter, sure to create discontent and conflict.

Counterfeit wages is a term that I have invented—whether good or bad you must judge—to characterize this inadequate wage that comes about from some of the many causes that reduce the purchasing power of money. Counterfeit wages are any wages however large they may be in dollars that will not buy the necessities of life and enough luxuries to make working for necessities a desirable thing and also to enable the recipient to make modest but adequate provision for sickness and old age. Counterfeit money has no value. Counterfeit wages have too little value when measured against the purposes which wages must serve. It is not a question of how much a man receives but of what he can buy for what he gets. Wages may double, but if prices are more than double then wages are counterfeit to the extent that prices have outrun the increased wages.

The causes that turn a good wage into a counterfeit wage are various. The speculation or the profiteering that raises the cost of homes, or the rent of houses, factories or shops may make a draft on the pockets of numberless employees that goes far to turn wages that have been adequate into counterfeit wages. Speculating or profiteering in the necessities of life has the same result. Manipulation of securities of public service corporations that raises the price of street car fares, gas and electricity helps to turn a fair wage into a counterfeit wage. The enactment of tariff laws that by crippling our foreign customers shuts down our factories at home, or by fostering bad trust agreements or undue profits, increases the cost of domestic goods, helps to make wages counterfeit. The merchant who by costly methods of retail or wholesale distribution adds unduly to the manufacturing cost of commodities makes inadequate and counterfeit a wage which might be adequate if goods were sold with less expense. The excessive fixed charges that result from watered stocks and from capitalizing expenses, or unfair "good-will" values, raise the living cost of the purchaser and increase the counterfeit margin of his wage. The inefficient and expensive government, local, state and national, that results from our easy-going American methods of choosing untrained administrators and from the partisanship that neglects the principles of good government in the effort to get and keep office, cuts down the value of every dollar that goes into the pocket of the workman — helps to make them counterfeit. The limiting of output by labor unions, resulting in fewer and higher-cost products, is a method by which the workingmen themselves turn their own dollars and the dollars of other wage-earners into counterfeit. Wittingly or unwittingly, employers and employees alike are often wage counterfeiters.

The fact that wages, however large, will not buy the things our employees want and need, induces discontent and a sense of being thwarted and wronged. This discrepancy between income and needed outgo makes men ready to listen to the irresponsible agitator who tells them that they are deliberately and constantly being robbed by us emplovers or by organized finance.

The method of thinking of wages in terms of dollars rather than in terms of commodities, recreation and savings is one that must be changed. There is nothing sacred about it. Together with many other unscientific and indefensible features of civilized life, it just "happened" to grow up. Discontent and strikes as a result of counterfeit wages will continue until a method of determining wages is adopted that will keep them fairly proportioned to the outgo essential to the maintenance of the American standard of living — a standard on which we Americans, justly pride ourselves and which we employers are generally as willing to pay as our employees are to receive.

The return for paying genuine wages rather than counterfeit more than makes up to the employer and to society for the extra money expenditure. The genuine wage tends to provide happy, healthy, contented and loyal employees.

If their wages are adequate to provide the necessities of life for their families and allow also for recreation and provision for illness and old age, they are increasingly freed from worry and are thereby made more efficient employees. If their wages enable them to buy freely, the value of the American market is maintained, to the profit alike of the manufacturer, the farmer and of the workman who makes and merchant who sells the product of the factory, mine and the farm. Best of all, it will remove one of the most fertile causes of strikes.

An important part of the responsibility for the adequacy of wages must be assumed by us employers. We are sometimes little schooled in theories of social welfare, have little imagination outside of our own immediate field of business management and are prone to think of our duties in terms of money, success or failure to the exclusion of terms of human welfare. It is most often members of our own employer class, also, who turn real wages into counterfeit. This being the case we cannot easily justify ourselves in taking a position of irresponsibility in the premises. The responsibility for reducing the excessive costs of retail distribution belongs to me and to my fellow-retail merchants. We employers should fight all excessive capitalization whose fixed charges help to turn into counterfeit the otherwise adequate wages we pay our employees. Our men of finance should see that the English law is adopted and enforced that requires a statement to be made to every purchaser of stock showing the promoter's profit and the real assets and liabilities of the Company. It is up to us to help provide credit unions or other safe and democratic means of saving and investing earnings. The training of the wage-earner in the use of his money so that by purchasing merchandise of good quality at the lowest possible price he will help to keep his wages real, is also our responsibility at least to a degree. Our responsibility is at least equal to that of our employees to see to it that they are not compelled to pay a street car fare of 10 cents to get to and from our places of business when devoted and wise administration of public service corporations might make 5 or 7 cents adequate. The same thing applies to railroad fares and freight rates. The responsibility to provide comfortable, attractive and sanitary housing at fair prices primarily belongs to the employer of labor. In any event we are responsible if we allow speculation in land and housing so to increase rents as to make wages counterfeit.

Our influence should be thrown, I believe, against excessive tariffs and other forms of interference with trade that, if they increase the profits of the employer at all, do so at the expense of the wage earner, of the farmer, and of the general public.

We employers should also, make use of the price indexes provided by the Department of Labor at Washington, and by several private agencies, as a scientific and business-like aid in an attempt to solve the problem of counterfeit wages through use of a sliding wage scale. It may be that the stabilization of the purchasing power of the dollar along the lines advanced by economists will sometimes help to remove some of the problems of the counterfeit wage. A scientific solution is highly desirable, but may take many years to bring about.

If we employers are to have fewer strikes, in the meantime, we must learn to think more of wages in terms of what they will buy then in terms of dollars and cents. When we do this we shall do away with many of the causes that make wages counterfeit. Because a man belongs to our club or our church will no longer be a reason for our standing by supinely and allowing him, by manipulation, speculation or profiteering to make counterfeit the wages we pay.

Let us now turn to a third reason why men strike.

We all recognize the truth of the statement that our present so-called capitalistic system is still using inherited ideas and customs that, although not discarded have really been outgrown. We know also that it needs to readjust its ideas, get rid of old abuses, and reduce the number of points at which friction between employer and employee is generated. Because I am not ready to burn my house down is no reason why I should not repair or replace a dangerous plumbing system. Because we are not ready to destroy the present organization of industry and put socialism or communism in its place, is no reason why we should not get rid of its abuses and bring it up to date.

Many employers and important organizations have made and are still making attempts further to humanize and improve our industrial system. One of the most significant, as well as most courageous, is that made by the Federal Council of Churches of America in formulating and publishing its social creed. This social creed is of very great significance emanating as it does from a body that represents substantially a half of the American people, and which is one of the most conservative elements in our American life.

This formulation is a creed and an ideal rather than a program of action. Difficulties and differences of opinion will no doubt be encountered in forging these ideals into a working program. Some of them may need to be restated and revised. It is a statement, however, which employers cannot afford to overlook or ignore. Progress is going to be made toward their achievement, and leadership will come into the hands of those who undertake to apply, in good faith, such principles as the churches have here formulated. It can hardly be doubted, moreover, that the stability of our social and economic institutions will depend in no small part on the growth among employees of confidence in the right-mindedness and right-heartedness of the leaders of business and industry.

I do not have time at my disposal in which to discuss at length a social program. I may be indulged, however, in pointing out certain as yet partially achieved goals which a consensus of informed opinion, both among employers and employees, recognizes as practical and just. This moderate program, if achieved, would go far to do away with strikes.

The right of employees to a voice in determining the conditions under which they shall work and to a stable and living wage have already been dealt with. Other goals that are now generally recognized as right and just, include

(1) the right of employees to unite for purposes of collective bargaining;

(2) a gradual and reasonable reduction in hours of labor;

(3) compensation for industrial accidents as a just charge on industry;

(4) the right of labor to be safeguarded in all matters pertaining to health, steady employment and good working conditions.

Men and women fit for American citizenship, the working hours of whose lives must be spent in stores and factories, in mines and on farms and railroads must and will demand just solutions of such problems as are presented by these statements of principle. It is to the advantage of us employers to lead in finding these solutions. It is to the advantage of the consumer and of society that we shall do so. If the elimination of outgrown ideas and the righting of old wrongs is left to labor alone, wage conflicts and strikes will continue on an increasing scale. The strike is their principal weapon. If they are forced to fight for their rights they must and will use it.

A great employer of labor said to me during the war, "When we employers in the past have had the advantage of our employees by reason of an over-supply of labor, we have used it for our own selfish ends. Labor now has the whip-hand and is merely doing to us what we have done to it in the past. I wonder," he added, "which of us will be wise enough to end this wasteful process of industrial conflict by first using its period of power wisely and generously?"

The opportunity of the employer has now arrived. The future relations of employer and employee will depend in no small degree on whether or not employers as a group, by hard thinking and friendly conference with our employees, go honestly at work to bring the industrial system up to date.

Important for the establishment of good industrial relations as are the three matters of which I have spoken, there is in my judgment a fourth reason of a still more fundamental nature — namely, that business shall more and more become a profession and be carried on in a spirit of service to the community.

The motive with which the employer directs his business and with which the employee works, will in the last analysis determine whether there will be industrial war or industrial peace.

Asked recently by the editor of The Annals to prepare an article on "A Single Code of Business Ethics" as one of a series of studies on the ethics of the several business and professional groups, I ventured to base it on these two brief formulas—

1. that a business, in order to have the right to succeed, must be of real service to the community;

2. that real service in business consists in making or selling merchandise of reliable quality for the lowest practicable possible price, provided that merchandise is made and sold under just conditions.

The merchandise must be sold as cheaply as possible so that as many as possible may buy as much as they need. It must be made and sold under just conditions, as one must not oppress his employees in order to make merchandise cheaper than it should be to his customers. But the chief point of the ethics of the profession of business, as I understand it, is that the great buying public is to be served by giving them dependable merchandise at an ever cheaper and cheaper price.

One of the tragedies in our industrial life of today is that when we employers are finally successful and the difficulties and perplexities are over that in our earlier years prevented us from giving full cooperation in solving the problems of our employees, and we have at last gained the financial freedom that enables us to decide questions between ourselves and our employees on their merits, we so often fail to use our new-found freedom to this end. We often begin, instead, to use our thought, time and money to build bigger houses than we need, to buy too expensive pictures and live in a needless luxury. We men have learned to simplify our clothing so that neither in cost nor styles is there a yawning gulf between those of employer and employee. But only rarely do we keep our living simplified to any such degree. But even if we are too sensible or public-spirited for ostentatious display, we feel that it is our first duty to give large sums of money to hospitals and other philanthropic purposes. For these and like reasons, we throw away the opportunity, won by a life of successful labor, to heal the wounds of industry.

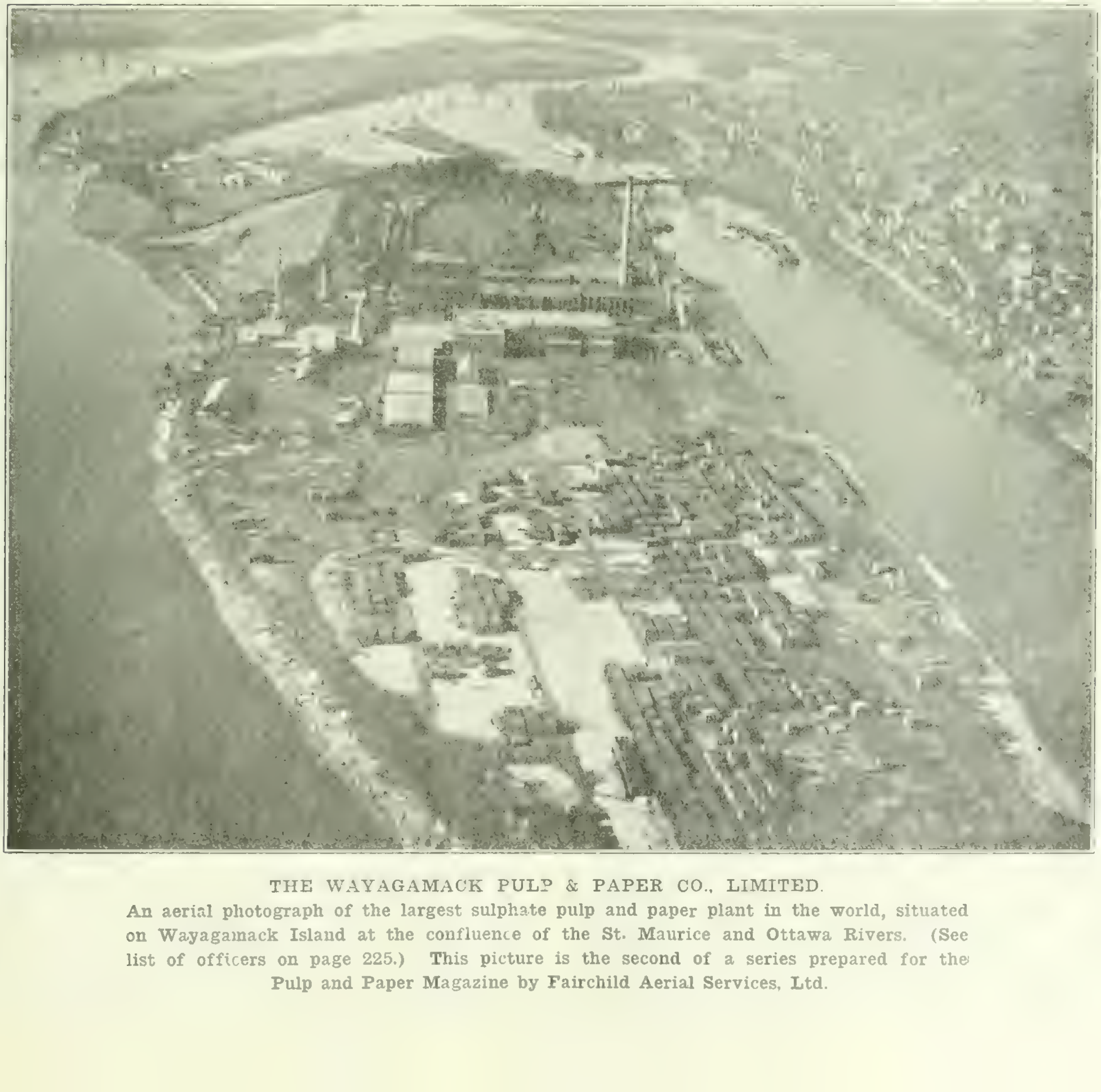
Philanthropy becomes a sin and an offense, when it uses for charity the earnings of industry that should be used for justice to employees and the public.

The first legitimate use of large profits, and the main use, is to reduce prices. These lower prices will, in turn, cause increased demand, increased production and increased total profit, at which point prices can again be reduced. It is worse than useless to merely increase production. Prices must at the same time be reduced enough to bring in the greatly increased number of purchasers needed to absorb this greater output. Employers are wrong when they endeavor to obtain mass production through lowering wages to a degree that lessens the number of possible consumers for their product. Employees are wrong when they try to get higher real wages or more work through limiting output. Both will find it far more profitable in the long run to join hands in efforts to furnish reliable and essential merchandise to the public at prices lower than it has been sold before. In this way they will greatly increase the number of consumers and increase the demand for workmen. They will at the same time increase wages, and the purchasing power of those wages.

When this spirit of service comes to be generally recognized for what it is, namely, good business as well as good ethics, the reasons for strikes will have been greatly lessened. The co-operation that will result between employer and employee — between management and labor — is perhaps the nearest we shall need to come to common ownership or the socialization of industry. Perhaps here is the door through which the strike will make its exit and industrial peace will enter.

The practical and compelling thought in any analysis of the reasons why men strike is found in the fact that the elimination of the cause of strikes is not only good ethics but equally good business. We employers like to think of ourselves both as good business men and as good Americans. In studying and removing the reasons for strikes, we shall find the road to that real cooperation with our employees that will largely satisfy our aspirations in both directions. And a grateful general public, which after all is most concerned in the solution of the industrial question, will applaud and reward our success.

The Paper Mills at Three Rivers, Que.



THE WAYAGAMACK PULP & PAPER CO., LIMITED.
An aerial photograph of the largest sulphate pulp and paper plant in the world, situated on Wayagamack Island at the confluence of the St. Maurice and Ottawa Rivers. (See list of officers on page 225.) This picture is the second of a series prepared for the Pulp and Paper Magazine by Fairchild Aerial Services, Ltd.

PULP AND PAPER NEWS

A. G. Pounsford, General Manager of the Port Arthur Division of the Provincial Paper Mills, Limited, has advised the head office in Toronto that he expects to be making paper at the plant before the end of the present month. The machinery has been placed and city power will be turned on at the plant in a few days. During the next week the machines will be tested and given their first runs, so that if everything is satisfactory paper-making will be under way before March 1.

The Buskegau River Pulp & Lumber Company, Limited, with head office at Cochrane, Ont., has been granted Ontario incorporation, the authorized capital being $40,000.

John F. Ellis, head of the Barber Ellis Company, Toronto, envelope manufacturers, has been elected Vice President of the Crown Life Insurance Company in successsion to Mr. Justice Mowat.

Alexander Buntin, head of the Buntin-Reid Company, Limited, paper dealers, Toronto, who died on Dec. 11, 1922, has left an estate valued at $300,988, according to letters probate field with the Surrogate Court in Toronto. The estate is made up of $140,000 worth of stock in trade; $47,012 securities for money; $39,925 in bank, and other stocks; $41,500 in real estate etc. The will gives to the widow the residence in which she is living and all the furniture, motor cars, equipment, horses, harness and carriages, while other members of the family are provided for. As regards the business carried on under the name of the Buntin-Reid Company the trustees are directed to consider at an early date the advisability of converting it into a limited liability company or of selling or liquidating the same. "I particularly desire," says the will, "that such business, if and so long as same be continued, be so carried on independent of the remainder of the estate insofar as it is possible in order that its liabilities shall not in any way constitute a charge against the remainder of my estate."

With power to manufacture and sell pulpwood and to engage in the manufacture of paper and paper products, James A. Stewart, Limited, has been granted Ontario incorporation with an authorized capital of $100,000 and head office at Port Arthur. Among the incorporators are F. H. Keefer, Hugh Keefer, L. Bengston, G. L. Maclean and L. C. S. Hallam, all of Port Arthur.

The Port Elgin Box Company, Limited, has been granted incorporation authorizing the company to manufacture cartons and to engage in business as stationers. The authorized capital is $40,000 and the provisional directors are Hilliard Brooks Bell, Andrew Alan Shuyler and Franklyn Wood Fisher, all of Toronto.

At the regular meeting of the Toronto Carton Club held on Feb. 13, George Reid of the Ontario Paper Box Company gave a cost demonstration which proved very instructive to the gathering. A visitor to the meeting was Duncan McDiarmid, of the Sommerville Paper Box Company, London, Ont.

W. J. Robertson, ex-President of the Commercial Stationers Association, Toronto, and Mrs. Robertson, have left to spend the balance of the winter in California. Mr. Robertson was presented with a leather dressing case by his fellow members of the organization just before his departure.

The Telfer Paper Box Company, John Street, Toronto, have just installed a double scoring machine in their plant.

R. A. Dunlop, who has been connected with the Dominion Paper Box Company, King Street, Toronto, for some months, assumed the active management of the concern at the first of the year. Mr. Dunlop succeeds A. Jephscott who, with his brother, founded the Dominion Paper Box Company, which is the pioneer in the trade in Toronto, forty five years ago. The business was sold to the F. N. Burt Company in 1911. Mr. Josephscott has retired from active business.

John Piper, Sales Manager for the Provincial Paper Mills, Limited, Toronto, spent a few days of last week at the Thorold mills of the company.

The many friends of Nelson Gain, of the Don Valley Paper Co., Toronto, will regret to learn that he is confined to the house with an attack of "Flu".

With power to manufacture and deal in paper machinery and to engage in business as publishers, printers, lithographers etc., Stone & Cox, Limited, has been formed in Toronto and has been granted an Ontario charter with an authorized capital of $40,000. Among the incorporators are Charles Cox, Charles Henry Hawthorn and Gilbert Stanley Webb.

Lieut.-Col. Thomas Gibson, Vice-President of the Spanish River Pulp and Paper Mills Company, Limited, Toronto, has returned from attending a meeting in New York of the Lake Superior Steel Corporation.

Fred Halls, of the Fred H. Halls Paper Company, Adelaide Street, Toronto, spent part of last week at his branch warehouse in London, Ont.

J. Baker, of the Columbia Paper Company, Washington, D. C., was a caller on the Toronto paper trade last week.

John Martin, head of the John Martin Paper Company, Limited, Winnipeg, dropped off in Toronto last week on his way back after visiting New York and Atlantic City. In conversation with the Pulp and Paper Magazine of Canada Mr. Martin said that there has been a distinct revival in the paper trade in the Canadian west and that the outlook for a good year's business was extremely bright.

"Trade Winds" is the title of a neatly gotten up booklet just put out by the Canadian Business Publishers' Association in Toronto. Its letter press constitutes a message to men who are interested in the development of business in Canada and contains a lot of valuable information on the subject of business papers as business-getters. It is proposed to issue "Trade Winds" every little while.

Mr. Norman Wainwright, who recently returned to Canada from England, has joined the sales force of the Provincial Paper Mills, Limited. He is selling the product of the Company's new mill at Port Arthur.

Mr. Pierre Rolland, of the Rolland Paper Company, Limited, has been elected a member of the council of the Chambre de Commerce, Montreal.

It is reported that a pulp and paper mill is to be constructed on the Winnipeg River, Manitoba, in connection with the J. D. McArthur timber limits. Engineers, it is stated, will soon investigate the possibilities of the proposed site.

Mr. Robert Karlberg, chief chemist of the Holmen Bruks and Fabriks Aktiebolag Paper Mills, Norrkoping Sweden, is on a visit to Canadian Mills

SPANISH RIVER MILLS HOLD ANNUAL BANQUET

At the seventh annual banquet of the Spanish River Pulp and Paper Mills, Limited in Sault Ste. Marie on January 21, the recent timber probe was touched upon by a number of officials, who all expressed satisfaction that the company had emerged from the investigation in a considerably stronger position than when it was drawn into it. A splendid address was delivered by President Mead of Dayton, Ohio, dealing with the past operations of the concern, its bright future and the very satisfactory relations existing between the company and its employees. Addresses were also given by Colonel Thomas Gibson, Col. C. H. L. Jones, the latter general manager; George R. Gray, manager of the wood operations; Hon. Dr. R. J. Manion M. P. for Fort William, and P. B. Wilson, vice-president. Brief speeches were also given by plant representatives from the Sault, Espanola and Sturgeon Falls, all dealing with plant operations and the close and satisfactory connection between the company and the men. The financial condition of the concern, after several years of world depression, was a theme that predominated most of the addresses.

WAYAGAMACK ANNUAL

The annual general meeting of the shareholders of the Wayagamack Pulp and Paper Company, Limited, was held at the head office of the company, Three Rivers, this week.

The following were elected directors: Norman J. Dawes, G. H. Duggan, Hugh Mackay, K.C., Alex. Maclaren, Sir Wm. Price, Jas. W. Pyke and C. R. Whitehead.

At a subsequent meeting of the directors, Mr. C. R. Whitehead was elected president and Mr. Jas. W. Pyke vice-president.

LARGEST KRAFT MACHINE

Rice, Barton & Fales, Inc., of Worcester, Mass., have just received an order for what is probably the largest Fourdrinier paper machine in the world, to be used exclusively in the manufacture of kraft paper. This machine is to be installed in the mills of the Southern Paper Company at Moss Point, Miss. It is to be built for a wire 168 inches wide; is to have a suction couch and suction press roll mounted on ball bearings, three presses, thirty-four dryers, five feet in diameter; one ten-roll stack of calenders, a uniform speed reel, slitter and two-drum winder. All the table rolls, breast roll and wire carrying rolls, as well as the press felt rolls and dryer felt rolls are to be mounted in ball bearings, and the machine is to be driven by an electric drive. This machine is to be designed to run at a speed of 700 feet a minute and delivery is to be made during the coming summer.

TO MAKE BAG MACHINES

Watertown, N. Y.—A. C. Coty, inventor of one of the best bag machines on the market, will soon return from Toledo, Ohio, and resume the manufacture of bag machines through the newly organized Coty Machine Company. About forty years ago Mr. Coty formed the Coty Bag Machine Company in this city and began the manufacture of a high-speed bag machine that gained a wide reputation. About two years ago he sold the company out to B. B. Taggart and went West. Since he has been away he has been improving and inventing new types of bag machinery and the new company, which he will head, will develop these new inventions, which include a sack machine capable of utilizing the heaviest kraft and manila stock, a new bottomer of rotary build, a bottomer which will put in both bottoms of a valve bag at once and a tuber, for cutting paper at a high rate of speed.

SPANISH RIVER HOCKEY TEAM WINNERS

The Espanola Paper Mill team, last year's Northern Ontario Hockey Association champion, is well on its way to duplicate the feat this year by beating Chapleau (C. P. R. team) in the semi-finals, winning the first of the home-and-home games by 6-2, thereby gaining a lead of four goals. The return game will be played in Chapleau Tuesday Feb. 20th when the final result should be in favor of the Papermakers. The winner will then meet New Liskeard in the finals. Espanola boys are playing the game of their lives this year trimming all their opponents as they come, both great and small.

TREATMENT OF CONCRETE

The subject of treating concrete for water proofing, hardening, etc., has been given a lot of attention of late. The practical applications of the results of this work are presented in a very convenient and useful form in the Truscon Architects' Specification Hand Book which is intended to give architects and engineers the information they require for specifying Waterproofings, Dampproofings, Oilproofings, Floor Hardeners and Protective Finishes.

Every effort has been made to make the book as clear and concise as possible, omitting all superfluous detail. Specifications will be found on each right-hand page, with a description of the particular product mentioned on the back of the Specification sheet. In most cases a list of prominent users of the product is also given.

The Truscon Laboratories have had long experience in the manufacture and use of Waterproofings and Waterproof Paints and Varnishes, and this experience is at the service of the architect whenever he desires more complete or detailed information.

In addition to this specification Hand-Book, the Truscon Laboratories, Detroit, Michigan, also publish complete literature descriptive of each product, which they would be glad to send any architect or engineer on request.

CAN FELTS BE SUCCESSFULLY MENDED?

We have received an inquiry from one of our correspondents as to whether felts can be successfully mended. That would depend to some extent on the nature of the paper for which the felt was used and naturally on the seriousness of the condition of the felt.

We have never seen among the torn felts that have been brought to our attention any that could be mended in such a way as to leave no mark in the paper showing where they were mended, and, if such a mark leaving its impression on each revolution of the felt impairs the salability of the paper, we should say that felts cannot be successfully mended. — Albany Felt Co. — Bulletin.

British Trade News

(From Our London Correspondent)

London, February 5, 1923

During the past few days the Anglo Newfoundland Development Company, Ltd., in accordance with the intimations sent out on October 28th 1922, paid off £300,000, out of the total of £800,000, of their 8 p. c. guaranted 15-year second mortgage debentures outstanding.

Labor Unsettled

The employment of non-union labor in some of the British mills has caused trouble in one or two places. The introduction of labor of this kind is like holding a "red rag before a mad bull" and, on the other hand, the masters contend in some cases that they are at liberty to engage whom they wish. It is the old story told and retold—capital versus labor. At Messrs. Samuel Jones, Ltd., a firm well-known and respected in South London, 250 workers went on strike because a secondary school girl, who has had a brilliant scholastic career, was introduced to the mill to be trained as a supervisor. The workers objected to her on the ground that she was non-union—none of the supervisors are in the union—and they left their jobs. The trouble is not over yet.

Non-union labor has also caused trouble in the Valleyfield Paper Mills. Workpeople and masters gave each other notice and the storm has not blown over yet.

Now if there was a proper system of welfare work, which included the engaging and dismissing of workers through works committees, none of the disputes at these mills would have occurred. I have always advocated it in large mills as it is the backbone of contentment.

Progress of Welfare Work

Welfare work made considerable progress in the British mills during 1922, but there is still room for improvement. The Thames Paper Company, Ltd., at Purfleet, recently took up the question of their workers' eyesight. About 150 employees were examined and of these 74 required optical treament and 70 pairs of spectacles were supplied to those in need of them under a special arrangement. In one case where the worker was engaged on special work, necessitating the counting of very fine meshes in wire guaze a watchmakers eyeglass was supplied. "It is obvious," says a report submitted to the management, "that the supplying of optical assistance to over 70 employees (quite apart from those who were examined in London) must have helped to make working conditions more pleasant and to promote efficiency. It is not claimed that this scheme is flawless, but it is a practical agreement which has worked and given good results."

There are many other mills working out schemes of their own and the suggestion box has proved a great success in most places.

Paper Prices

Papermakers in England and Scotland are complaining that their prices for their products are ruinously low and not in keeping with the cost of production. Efforts are being made now to get prices on a better level, but foreign imports and the general desire on the part of users to go in for the cheaper artice—part of the economy "axe" in most houses—militate against papermakers.

Rubber latex paper is now on the market including a large range of papers for printers use. I recently inspected some samples and they are most interesting. Early in 1922 I dealt fully with Rubber Latex and its adoption in paper production should now be pretty well known in Canadian circles. (See page 215.)

Sir Fred Becker

Canadians will be interested to know that Sir Frederick Becker, the pioneer of Canadian pulp in England, is in America on business. He may visit Canada.

The Swedish Troubles

Up to the time I write nothing definite has been announced in connection with the lock-out of workers in the pulp mills of Sweden. Rumor has it in London today that all the mills are idle and the paper mill owners are advocating a new wages agreement with their employees.

In England the lock-out is welcomed, in some degrees, as it will enable the British mill owners to tackle the question of prices.

Swedish pulps in London have hardened in price.

Canada's Competitors

Canada is enjoying good trade with the British market in packing and wrapping papers. The following figures show the Dominion progress in comparison with other supplying countries:

	1913 cwts.	1921 cwts.	1922 cwts.
Finland	262,796	204,560	282,740
Sweden	1,366,886	632,183	1,058,478
Norway	1,058,624	261,729	641,514
Germany	892,589	166,267	381,901
Belgium	280,782	77,291	90,202
Canad		17,584	116,876
Other Countries	228,729	173,250	2173,250

These figures are interesting as they prove that Canada has captured a fair share of the trade from Scandinavia and Germany. In 1913 Canada's trade with the market here in packings and wrappings was small—too small to be recorded—today she is an important factor. Let's beat the 1922 record.

Newsprint From Canada

Canada and Newfoudland have also come well to the fore in shipments of newsprint to the British market. In 1913 Newfoundand sent about 43,000 tons while Canada's supplies were extremely small. Today the shipments from Canada, Newfoundland, and other countries are given as follows:

	1921 Cwts	1922 Cwts
Canada	5,203	189,681
Newfoundland	745,720	1,108,757
Sweden	572,761	573,219
Norway	219,557	649,291
Germany	97,273	93,761
Belgium	73,518	26,687
U. S. A.	7.381	78,545
Other Places	1,034,055	1,112,417

The Dominian in 1922 has made progress with the market here—and there are indications on all sides that Canadian newsprint and paper is appreciated.

During 1922 mill boards, leather, and cardboards, were imported to the extent of 879,182 cwts., compared with 503,451 cwts in 1921. Strawboard shipments reached 2,966,880 cwts—an increase of 1,240,236 cwts over 1921.

GEORGE MARSHALL

Toronto, Feb. 19. One of the best known paper salesmen in Ontario passed away on Saturday in the person of George Marshall, who for twenty-one years was employed with the Canada Paper Company, operating from the Toronto office. Deceased died at the residence of his sister, Miss A. G. Marshall, 54 St. Claire Avenue, west, after a week's illness with pneumonia. The late Mr. Marshall, who was widely known in the paper trade throughout the province, covered Western Ontario for the Canada Paper Company, and of late had been doing city travelling in Toronto. He was unmarried.

Technical Section

REVIEW OF RECENT LITERATURE

K. — Paper Manufacturing and Equipment

K-12 Formation of Froth. Wochbl. Papierfabr. liii, 1321-1322 (1922) Translation by I. Ginsberg in **Paper Trade J.** lxxv No. 11, 26, (Sept. 14, 1922). Outline of the main causes of froth formation and of the means for preventing it.-A.P.-C.

L — Articles Produced from Pulp and Paper

L-5 Cellophane: Its Properties and Methods of Testing. WILLY GRUENWALD. **Zellstoff u Papier** ii, 186-187 (1922). Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 22, 53, (Nov. 30, 1922). Cellophane is a product similar to artificial silk, except that it is precipitated in sheet form instead of as a thread. Details of manufacture are kept secret. Its properties and uses are briefly described.-A.P.-C.

L-7 Wood Fiber Yarns and Fabrics. R. W. SINDALL. **J. Textile Inst,** xiii, 133-139 (1922); **Chem. Abs.** xvi, 4353 (Dec. 10, 1922). The cutting off of jute importations to Germany and Austria during the war resulted in the opening of more than 500 paper yarn factories by the end of 1917. Short accounts are given of the different inventions for converting wood to wood pulp and the latter to yarns. The effect of spinning on strength and elongation is shown by the following figures: plain dry pulp strips, breaking length 4,170 m., elongation 2.84%; rolled cylindrically 5,180 m., and 2.17 %; rolled and twisted 6,410 m. and 3.06 %. In general finished fabrics from wood pulp have about half the strength of jute fabrics of the same make and weight. During the past few years the activities of the manufacturers have been devoted to the improvement of the yarn in the direction of durability, water-resistant properties and tensile strength by the treatment of the pulp or yarn with various chemicals before spinning or twisting. Tannin fixed with gelatin increased the tensile strength about 25% and when fixed with aluminium acetate the increase was 44%.-A.P.-C.

M — General Equipment

M-12 A Continuous Specific Gravity Recorder. P. W. CODWISE, Byron Weston Co. **Paper Trade J.** lxxv, No. 20, 54-56 (Nov. 16, 1922). The author describes a new type of continuous recording instrument (invented by S. D. Wells) designed to record the specific gravity of liquids, which operates on the principle of weighing a constant volume of the solution and recording this relative weight as a continuous operation. A detailed survey has been made of the application of this machine to the specific problem of giving accurate records of the Beaume test of the tub sizing solution used in the manufacture of fine papers. The various difficulties encountered and the methods of overcoming them have been detailed. It is concluded that this instrument is a valuable contribution to the scientific control of many manufacturing processes and of distinct interest to those concerned with the management of the same.-A.P.-C.

N — Power Generating and Equipment

N-6 R-12 Power Plant Cost Accounting Adaptable to Different Classes of Paper and Pulp Mills. Paper Trade J. lxxv, No. 22, 51-53 (Nov. 30, 1922). An outline of steam and power plant cost accounting based on forms prepared by V. D. Simons and the Republic Flow Meters Co.-A.P.-C.

N-6 The New Moore Bleeder Type Turbine. Paper Trade J. lxxv, No. 16, 28, 30 (Oct. 19, 1922). A brief description of the turbine and of its merits.-A.P.-C.

R — General

R-12 The Pulp and Paper Cost Accountant — His Past, Present and Future Place in the Industry. SETH L. BUSH. **Paper Mill,** xlv, No. 45, 28, 30, (Nov. 18, 1922); **Paper Trade J.** lxxv, No. 20, 18-19 (Nov. 16, 1922); **Paper Ind.** lv, 1255-1256 (Dec. 1922).-A.P.-C.

R-12 A Standard Basis for Comparative Cost Estimates. JAMES A. REILLEY, American Writing Paper Co. **Paper Trade J.** lxxv, No. 20, 20-28 (Nov. 16, 1922); **Paper Mill** xlv, No. 45, 32, 34, 38, 40 (Nov. 18, 1922). The author shows the great benefits which would be derived from the adoption of a standard basis for estimating costs in the paper industry, and presents and explains in detail an estimate similar to that used at the American Writing Paper Co., which is proposed as a basis for working out a standard estimate for writing and covers.-A.P.-C.

R-12 R-13 Costs and the Paper Industry. T. J. BURKE. **Paper Trade J.** lxxv, No. 20, 32-38 (Nov. 16, 1922); **Paper Mill** xlv, No. 46, 26, 28, 30 (Nov. 25, 1922); **Paper Ind.** iv, 1248-1250 (Dec. 1922). A discussion of the benefits of the Cost Association to the Industry, to the different groups in the industry, and to individual cost men in the industry, together with an enumeration of the advantages to be derived from uniform cost accounting.-A.P.-C.

R-12 The Co-Ordination of Expense Items in Preparing Departmental Budget. J. A. REILLY, American Writing Paper Co. **Paper Trade J.** lxxv, No. 21, 32, 34 (Nov. 23, 1922); **Paper Mill** xlv, No. 46, 18, 42 (Nov. 25, 1922); **Paper Ind.** iv, 1251-1253 (Dec. 1922). A discussion of the advantages of budget making and of the method of arriving at as accurate figures as possible for the various items of expense classified under the main headings: labor, supplies, fixed charges, and miscellaneous items.-A.P.-C.

R-13 National Paper Trade Association Meeting, Chicago, Oct. 18, 1922. Paper Trade J. lxxv, No. 17, 38-48, 65-78G (Oct. 26, 1922). A stenographic account of the meeting of the fine paper and wrapping paper divisions.-A.P.-C

R-13 Meeting of the Empire State Forest Products Association, Syracuse, N. Y. Nov. 9, 1922. Paper xxxi, No. 5, 10-11 (Nov. 22, 1922). A brief account of the meeting. Special stress was laid on the necessity for legislation against fire and beavers.-A.P.-C.

R-0 Direct Advertising and its Relation to Paper Printing Salesmen. H. THRILL. **Pulp and Paper** xx, 1069-1070 (Dec. 7, 1922). A plea for the establishment of an organization for developing direct advertising.-A.P.-C.

UNITED STATES NOTES

Harry Edwin Roden, executive secretary of the Metropolitan Paper Box Manufacturers' Association, New York City, notes an improvement so far this year in the setup box line of from 20 to 50 per cent. above sales recorded a year ago. "The first eight to nine months of 1922," Mr. Roden states, "were the poorest in a decade of the history of the box industry, not only in New York, but throughout the country. Commitments for boxes, which are in reality the dress suit of merchandise, and without which hundreds of descriptions of articles could not be displayed to advantage nor kept in shape, naturally follow the placement of orders in the manufacturing and wholesale markets, and the record number of jobbing, department store and retail shop buyers in New York at present indicates an exceptional need for boxes in the near future. The new year brought with it a marked increase in the cost of boxboard and small upturns for box cover paper and kraft which in turn must be reflected in the price of boxes. The present value of boxboard is $65 and $70 for chip and news, respectively, as compared to $30 last summer and fall, which is 100 per cent. advance, resulting from higher prices demanded for waste materials, the raw stock now commanding a price in excess of what the finished product brought six months ago."

Orders for modern paper machinery from Great Britain and China have been taken recently by the Shartle Brothers Machine Company of Middletown, Ohio. In most cases the contracts entered into represent large business and there are indications that the company will soon work up to a substantial export trade.

Secretary Wallace of the Department of Agriculture and W. B. Greeley, Chief Forester, conferred last week with members of the Senate special committee on reforestation. As a result the committee decided to begin hearings during the present week. After Congress adjourns, the committee will make investigations in virtually all of the lumbering sections of the country.

Paper manufacturers of the Miami Valley section of Ohio are giving all possible support to efforts looking to the conversion of the Miami and Erie canals into barge waterways. The matter has come to the fore again as the result of a bill in the Ohio legislature having for its purpose the abandoning of sections of the canal so as to convert them into a boulevard. A meeting, attended mostly by members of the Miami Valley Paper Manufacturers' Association, was held at Hamilton last week, the paper men voicing their protest against the closing of the canal. A fund was raised to aid in pushing the project of a barge canal, and resolutions were adopted pledging support to the ship canal extending from Cincinatti to Toledo. Announcement was made that Government engineers would in all probability recommend the Erie and Miami route over four others which have been under investigation for several years.

In a decision rendered by Supreme Court Justice J. L. Cheney of Syracuse, the Sulphite Pulp and Paper Company won a point in its litigation with William R. Hearst, the publisher, over the sale of the Dexter plant and properties in 1920. The decision was upon a motion by the company for consideration of the action brought against Mr. Hearst to compel the specific performance of his contract to purchase the mills and properties of the company for $3,500,000, merging this action with the one brought by Mr. Hearst for the cancellation of that contract. Justice Cheney conceded the contention of the company that the action against Mr. Hearst contains all the issues of the litigation, making it unnecessary to try them both, one of which is laid in Jefferson County and one in New York County. Through the consolidation of the two actions the battle will be staged in the Jefferson County Court. This means that the trial will be reached with greater speed than in the Metropolitan Court.

The American Tree Association's call to "celebrate the centennial of Arbor Day in 1972 fifty years before it happens by planting trees now" will be answered in thousands of places the Association's officials say, now that Arbor Days are at hand. The first States to begin planting will be Alabama and Texas, in each of which Arbor Day comes Feb. 22, which is also Washington's birthday. According to the association, which sends free tree planting instruction to any one who asks for it, California is out to keep the lead in roadside planting and this spring will see many new miles of roads beautified with trees and shrubs. Arbor Day comes in that States on March 7. To Georgia goes the first place for a Statewide educational campaign calling for tree planting. In New York State this spring Orders to the New York State Conservation Commission have passed the 2,000,000 mark for trees. The largest tree planting inspired by an individual is credited to G. J. Boehland of Rockford, Ill., who is giving away 13,000 trees this spring.

The Consolidated Water Power and Paper Company is arranging to install in its Biron division mill during the coming summer a huge newsprint machine similar in size and capacity to the mammoth machine in its Wisconsin Rapids mills. The Beloit Iron Works, which has supplied all the machine equipment in the Consolidated company's mills, will build the new machine.

A. Z. Smith has resigned as superintendent of the Hagar Straw Board and Paper Company's mill at Cedarville, Ohio. He will be succeeded by H. G. Funnsett, according to announcement of W. W. Galloway, general manager. Mr. Smith held the position of superintendent in the Hagar mill for twenty-six years.

The Conservation and Recreation Assocition of Chatauqua County at Dunkirk, N. Y., has planted during the last year and a half 9,000 spruce and Skotch pine on a tract the organization is reforesting.

Lawrence E. Nash, who has long been manager of sales for the Nekoosa-Edwards Paper Company of Port Edwards, Wis., was made a vice-president of the concern at a recent meeting of stockholders. L. E. Smith was promoted to general superintendent over all the mills producing chemical pulp which includes Port Edwards and Nekoosa. Mr. Smith is chairman of the Northwest Division of American Pulp and Paper Mill Superintendents' Association. B. T. McBain, who has been director of manufacturing, has been made assistant general manager of the company. C. A. Wiley continues as assistant director of manufacturing under Mr. McBain.

The Markets.

CANADIAN TRADE CONDITIONS

Montreal, February, 20. — In the see-saw of business conditions, there occurs a period when trade becomes slack — there is a falling off of orders for no apparent reason. This was the case during last week, which was dull so far as local business was concerned. The orders from outside sources proved a little more numerous, but on the whole it was not a week to write home about. There is nothing wrong with conditions generally, as the market is settling down to a pretty steady basis.

The tendency for the prices of raw materials to advance is a fact which will soon have to be seriously considered. There is little chance of a drop in operating costs, while at the same time quotations of many materials which enter into the manufacture of paper are moving upwards. It may be that the mills will be forced to advance prices, although the inclination is to keep them stationary as far as possible.

The position in newsprint shows little variation. The publishers are taking large quantities of paper, with a prospect of this being continued. Provided there is no alteration in price, the companies should be able to earn reasonable profits this year.

The call for book, writings, bonds and ledgers is moderate, with the first named in most demand. Tissues and toilets keep up very well; the price of tissues has been reduced by 10 per cent, this cut, it is reported, being due to possible importations of European tissues at very low prices. Boards are being freely purchased notwithstanding the higher values. The roofing felt section is very firm, prices advancing about $5.00 per ton. The manufacturers are faced with rising costs, and are passing on the extra outlay. Rags are in request, white descriptions moving upwards. Waste paper however, has eased a little.

With regard to pulp, a cable received here states that the Swedish workmen have declined the proposal of the arbitrator in the wood pulp strike, which consequently continues. If the industrial trouble goes on for any length of time it is certain to have an effect on prices favorable to Canadian production. The recent slackness in the demand for bleached sulphite has disappeared, and orders are again coming in at a very satisfactory rate. Ground wood has again softened, owing to a falling off in demand combined with improved water conditions in the Watertown, N. Y., district, enabling more pulp to be manufactured. Conditions there will, no doubt, steadily improve, thus lessening the call on the Canadian production.

Toronto Market News

Although apparently not due to any inherent fault in market conditions generally, the fact remains that February is not stacking up well in the distributing end of the paper business in Ontario although without exception the mills are busy. Toronto paper merchants are inclined to place the sudden dulness in trade this month at the door of the epidemic of influenza and the severe weather that have prevailed since the opening of the month. Whatever the cause most paper houses report business quiet although they state it is nothing to worry about. They are worrying more about the rumors of prices increases in books, bonds, writings, etc., that are in the air, but which have not yet eventuated on this side of the line. That they are coming, however, seems to be pretty well established and jobbers do not view the prospect of adjusting their prices upward with equanimity. One price recession took place last week, that of tissue papers, which were reduced five and ten cents a ream in order to meet the foreign competition that has been attempting to get a foothold in the Canadian tissue market. Other lines remain unchanged.

PULP — Ground wood pulp is a little easier following the tendency for the past two or three weeks and while the February price is around $46.00 at the mill it is said that purchasers can get shipments for a less price than that. As a matter of fact, however, the demand is light and most of the paper mills appear to be fairly well stocked. It is understood that the price for ground wood in the States has fallen off about ten dollars which may have the effect of further weakening the Canadian market. No changes are reported in prices of other pulps and the demand continues light. Bleached sulphite is quoted at from $80 to $90 and unbleached at from $57 up as high as $75, with sulphate around $60.

BOOKS, BONDS AND LEDGERS. — Mills making these papers are all busy and most of them are running at capacity. There are persistent rumors of likely advances in prices but the jobbers do not appear to be inclined to speculate on the outcome and are not putting in stocks. They are, however, buying moderately and the mills generally are doing a good business with a fair amount of orders ahead.

WRAPPING PAPER AND BAGS — Business is somewhat quiet in these lines and jobbers say that orders are not coming easily. Manufacturers are running fairly full, however, and the trade appears to be in a fairly strong position except for falling off in consumption due, probably, to the severe weather and "Flu" epidemic. It is believed that there will be a revival in business in these lines by the end of the month but in the meantime there is undeniably a dull spell on.

TISSUES and TOILETS — Although not warranted by an decrease in raw materials Canadian manufacturers of toilet papers last week dropped the price of their product from five to ten cents a ream. The assigned reason is the encroaching foreign competition which the domestic manufacturers have been up against for some time now and which it has been found necessary to combat. The mills report a well sustained volume of business and trade generally is good. Toilets and other light weight papers were not affected by the decrease.

COATED PAPERS. Coated paper manufacturers contrary to expectation, have decided not to increase the price of coated stock although it is admitted that with the high cost of raw material, labor, etc., the manufacturers are operating on a rather small margin. Coated paper mills are fairly busy and some of them report orders from two to three weeks ahead with a bright outlook for an increased volume of business.

PAPER BOXES. There has been a falling off in February in the volume of business being done by the Toronto paper bax makers but it is generally believed that it is simply a temporary lull and that the stride will be picked up again in a few weeks. One big paper box firm stated that the rise of ten dollars a ton in chip and vat-lined box board, which went into effect last week, was to be regretted as it will mean a rearrangement of prices in the paper box industry and business was already hard to get without increased rates being put into effect. Despite the present lull the industry is in a fairly prosperous state and some paper box manufacturers take the view that increased prices following the rise in board will have a healthy, rather than a deterent effect. While the production of standard lines of folding and set up boxes keeps up fairly well it would appear as if comparatively little specialty business is passing at the moment and little new business is developing.

NEW YORK MARKETS

New York, February 17—(Special Correspondence) — Firmness is still the outstanding characteristic of the paper market. Prices of all kinds of paper display much strength and the tendency of the market continues to be upward though there are influences at work to keep price levels within reasonable bounds so as to encourage rather than scare buyers in their operations. That consumption of practically all kinds of paper is practically normal at present and that some grades are being used in a volume exceeding normal seems a certainty. Moreover, there is apparently no doubt that a new high record of consumption of paper of some kinds will be established this year, which in itself means that paper manufacturers are going to experience excellent business in the next few months.

Weather conditions have been quite unfavorable this week. A severe cold spell has been experienced throughout the northern part of the States, heavy snow falls have been recorded, and transportation accordingly has suffered. Mills have been hampered in shipping out their product and in receiving needed supplies of raw material. This obviously has had a tendency to firm up paper prices, especially in consuming centres like New York City, since the regular movement of supplies from mills to the cities has been interrupted to no little extent. However, no broad changes in quotations have been noted. Slight advances here and there have been put into effect, but prices on the whole remain at about last reported levels.

As one representative trader described it, the newsprint market is "as strong as the Rock of Gibraltar." There is an active and consistently heavy demand for print paper, and consumption keeps up at a high point. Publishers in New York, for example, are putting out larger issues day by day than in a long time. This big consumption moreover is based on a solid foundation; in other words it is due to the large volume of advertising the newspapers are carrying.

Prices of newsprint are strong. There is much conjecture in the trade regarding the future of prices, many expecting advances and others feeling that manufacturers will merely keep quotations where they are. The only danger, it would appear, is that of over production. So many mills, particularly in Canada, are planning increased output that it might develop more paper is being produced than required. This, however, is believed to be a matter of the future as it takes time to enlarge the capaity of paper mills.

Book papers are showing satisfactory market activity. Those mills relying on contract business are reported well sold ahead and to be running at close to full capacity; those disposing of their product to transient buyers also are busy and are operating very nearly at maximum. Book paper prices are firm. Machine finished book is quoted at from 7 cents a pound upward f.o.b. New York with practically no supply except on contract available at less than this price basis. With unbleached sulphite pulp evincing strength and likely to be higher in the spring owing to the Swedish pulp mill lockout, it is not improbable that higher prices will be recorded for book papers.

Coarse papers are firmly quoted and are enjoying a good demand. No. 1 domestic kraft is selling at from 7 cents a pound upward f.o.b. New York, and manufacturers are reported well supplied with orders in spite of the large importations of wrapping paper from Sweden and Germany. Tissues are steady at about a price basis of between 95 cents and $1 a ream for No. 1 white tissue.

There has been a little softening of quotations on box board. The reason for this is two-fold, first because of a sagging off of demand from paper box manufacturing circles, and second a weakening of prices of waste paper, thus decreasing the cost of manufacturing board. There is still a fairly active call for boards but consumers are not absorbing supplies in as large amounts as they did recently, this probably being due in part to many box producers having covered their requirements for a time. With the pre-Easter season approaching, however, it is likely the movement of board will increase, since this is the busy time of the year for the paper box industry.

Current prices of plain chip board range around $62.50 per ton f.o.b. New York, with some sales down to $60 reported. News board is quoted at about $67.50 a ton, on an average.

GROUND WOOD — The market for mechanical pulp is not as strong as it was a short while ago. Demand from consuming sources seems to have receded somewhat, and despite the season when production usually is at a low ebb and also despite the bullish statistical position of ground wood, prices have eased off slightly. Spruce pulp is reported selling at around $43 a ton f.o.b. grinding plants, and in certain cases lower prices than this have been mentioned, down to $40 having been talked of as the level at which some ground wood has been secured by consumers.

It appears likely that imported supplies have had something to do with the easing of the market. It is known that some sizeable shipments from European sources have been received recently, and perhaps efforts on the part of importers to move this pulp quickly after its arrival have affected market prices. However, in view of the small stocks of ground wood in this country at present, it seems improbable that any sharp decline in prices will occur especially since it is acknowledged that consumption is on a large scale.

CHEMICAL PULP — A rather uncertain tone continues to mark quotations on chemical wood pulp. When importers and domestic producers talk of future supplies they name stiff prices and seem altogether unwilling to commit themselves as sellers excepting at the prices quoted, whereas spot lots of pulp are being marketed at concessions. This condition is due principally to the rather large importations of pulp and the anxiety of importers to dispose of unsold supplies owing to the increased storage charges at American ports, thus accounting for the soft tone of spot prices, while the feeling regarding the future is bullish because of the lockout in Swedish pulp mills, the opinion prevailing that if the strike in Sweden lasts for any appreciable length of time there will not be available the usual amounts of pulp which American paper manufacturers secure from Scandinavia

Late cable reports from the other side of the Atlantic say that the lockout is maintained and that there is small likelihood of its being terminated before March 1, if on that date. Swedish manufacturers are reported quoting in excess of 3 cents a pound for both unbleached sulphite and kraft pulp for shipment after navigation opens, and importers here are naturally hesitant about entering commitments because of the developments that may arise in the interim. Quotations on domestic pulps are steady though buyers also are getting these at price concessions in some cases.

RAGS. — There is a firm tone to the market for papermaking rags and prices are holding steady with such changes are as occurring invariably in an upward direction. Roofing grades in particular display strength. Consumers are buying carefully, but there is nevertheless enough demand to fully maintain prices and to create a bullish attitude on the part of dealers, who report sales of No. 1 roofing stock at around 1.50 cents a pound f.o.b. New York and of No. 2 packing at 1.35 to 1.40 cents. Old white rags evince a rising tendency, and high-class packing of No. 1 whites is quoted at 6.50 cents a pound or more, and No. 2 packing at around 4.25 cents at shipping points. New cuttings are firm and are reported moving in satisfactory amounts. Dealers quote about the following figures f.o.b. New York: No. 1 white shirt cuttings, 12.50 cents a pound; fancy shirt cuttings, 6 cents; unbleached muslins, 11 cents; white lawns, 10.75 cents; light silesias, 8 cents; black silesias, 5.25 cents; No. 1 washables, 5 cents, and blue overall cuttings, 7 cents.

PAPER STOCK — Low grades of old paper have continued to sag this week notwithstanding reports to the effect that a good movement toward mills was in progress. Old folded newspapers have sold at 1.40 to 1.45 cents per pound f.o.b. New York, recording a decline of several dollars a ton, and No. 1 mixed papers have sold down to 1.15 cents a pound New York. Second grade mixed paper has been bought by mills at as low as 85 cents a hundred pounds f.o.b. this city. On the other hand, the better qualities of waste paper hold fairly steady in price. Dealers quote 4.25 cents a pound or higher for No. 1 hard white shavings, 3.75 cents for No. 1 soft white shavings, close to 3 cents for ledger stock, 2.70 cents for heavy magazines, and around 2.40 cents for No. 1 packing of old kraft paper.

OLD ROPE AND BAGGING — Old manila rope is a strong item at present and paper mills are reported paying close to 7 cents a pound at shipping points for domestic rope though about 6.75 cents appears to be a representative price level. There is not much old rope available, from all indications, and this enables sellers to get their price from consumers. Old bagging is comparatively quiet with prices showing little or no change. No. 1 scrap bagging is quoted at about 1.20 cents a pound f.o.b. New York, roofing bagging at 1.05 cents, and No. 1 gunny bagging of domestic origin at 1.40 cents.

HANS LAGERLOEF, President and Treasurer
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WOOD PULP

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Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

With the Woodsmen

ECONOMY OF CUTTING FOUR-FOOT PULPWOOD

By O. M. PORTER
Secretary-Treasurer, The Woodlands Section, American Paper and Pulp Association.

One of the purposes of the Woodlands Section of the American Paper and Pulp Association is to provide a medium for the gathering and dissemination of information which will promote the permanency of the wood operations of the pulp and paper industry. The timber supply of the United States has been reduced to such an extent that this permanency of the paper industry would seem to hinge on three possibilities:

(1) The use of other raw material than wood fibre.
(2) The maintenance of the present timber supply by reforestation.
(3) The prolongation of the present cutting cycle by increased utilization, fire prevention and intelligent forest management.

All of these are possible. The third suggestion, however, would seem to have the greatest merit from the paper industry's point of view. We can reduce the present enormous and unnecessary fire loss; we can prolong the cut somewhat by closer utilization in the woods; we are finding use for "new" species in paper pulp production; and we can put our timber lands on a basis of sustained yield by careful forest management. How soon we will do that depends upon how soon paper and pulp manufacturers will realize the facts of the limited pulpwood supplies, the excessive costs of transportation and the possibilities in the production of pulpwood on their own lands.

Favor Shorter Lengths

In the production of pulpwood, the question is sometimes raised as to the economy of cutting four foot, rather than standard log lengths in the woods. The consensus of the opinions of members of the Woodlands Section who have had experience in the production of pulpwood might be summarized in favor of cutting four-foot wood, as follows:

Drives

a—Utilization of smaller streams.
b—Lessened stream improvement costs.
c—Jams easier to break.
d—Requires less experienced, cheaper men.

Wood Operations

a—A cleaner and more concentrated operation.
b—Operations on a piece-rate basis.
c—More complete utilization.
d—Short hauls.
e—Cheaper loading.

All this simmers down to the fact that where four-foot wood is cut, the labor is less expensive, the men go further in the tops, and the product can be floated in streams which would not carry long logs.

As regards the expense of cutting four-foot wood in the woods, or at the landing, an operator at Bangor writes:

"The general experience in Maine has been that it is cheaper to cut and peel, if possible, in the woods. Peeling makes less weight to transport, not only on account of the absence of bark, but because the wood has a better chance to dry. There is also less loss by sinkage in driving. If the cutting is done in the woods, the whole thing is completed at one operation, whereas if the wood is cut at the landing, it means a second handling of the logs. Some advantages may or may not be obtained by the use of gasoline or steam, but I think that the cost of running a machine about balances the cost of labor in the woods. Where wood is to be shipped on the cars, it is probable that cutting into four-foot lengths can be done more uniformly on the landing. There would be less likelihood of sticks being a little too long, which would interfere with compact loading."

How to Cut Costs of Sorting

The Woodlands Section would welcome suggestions as to practical methods to be used in reducing the cost and increasing the speed of sorting river-driven, four-foot pulpwood and logs.

The suggestion has been made that sorting might be facilitated by the use of chains, carried on piers at the sorting works, and driven by motors, so as to move the wood more rapidly, and make identification of the owners' brands or marks easier and more accurate.

D. A. Crocker, of the Eastern Manufacturing Company, sends the following as result of his experience on the Penobscot:

"The use of a standard automatic stamping machine is more satisfactory than painting by hand with a brush. The cost of painting is greater than that of stamping; four-foot pulpwood can be stamped on both ends for about 5 cents per cord, done on piece-rate basis, while painting costs not less than 8 cents per cord on one end, and about 12 cents more if both ends are painted. But painting expedites sorting with reasonable speed and economy, although the unit cost is greater than that of sorting logs.

"The stamping machine works better than painting by hand on wood that has been frozen, unless there is ice or snow on the ends of the sticks. On unfrozen wood, the stamping machine is far superior, making good solid marks, rather than a surface smear, as with a brush. It is the custom to mark early all wood cut before snow comes, and to use the brush on wood cut after snow comes.

"Yellow paint has been found the most satisfactory; when applied on newly cut wood, it shows up poorly, but stands out when wood has been in the water. A so-called mineral base paint must be used for satisfactory results. Any reputable paint company will work out the problem. In Canada, it would be better to buy from a paint manufacturer of good standing, rather than from manufacturers of machines who sell some special paint, and thus avoid the duty. Skimping in the quality of paint will result in poor marking. The best quality must be used if mark is to last."

USELESS CLEARING

Large stretches of land are being cleared to no purpose at all. Such land may never become useful for cultivation. These methods are also influencing bodies of water, permitting a decrease in source of supply and a consequent lessening of available energy.

Until such time as these matters are taken up and definitely acted upon, it would seem that Canada will be faced each year with a steadily declining forest reserve upon which her industry may call at a future time. It is being urged more and more by people who have made intensive study of the question, that more definite steps be taken immediately towards forest conservation and repetition.

U. S. DUTY APPEARS FALSE ALARM

The treasury department of the United States, under date of January 16th, 1923, has sent instructions to collectors of Customs, under paragraph 401 of the tariff Act of 1922, to assess duty on certain logs cut from crown lands in the province of New Brunswick, and to admit, free of duty, certain logs cut from private lands in that province.

Paragraph 401 of the United States tariff, which has already been published in full as far as it applies to lumber, timber, pulp and paper, provides for retaliatory duty on materials whose export is restricted in any way.

It provides a duty of $1.00 per thousand feet, board measure, for the class of logs specified as fir, spruce, cedar or western hemlock, which may be imported into the United States having been cut on crown land in the province of New Brunswick.

Since the very Act which provides for the prohibition of export of such logs, there is the occasion for this action on the part of the United States treasury department, we don't see where there is any change in the situation. If there are no logs exported from the province, having been cut from crown land, we don't see where there is going to be anything for the treasury department collectors to assess with the duty. The Bulletin of the department to their collectors, specifically exempt logs cut from private lands in the province from any such duty.

MOTORS IN DAMP LOCATIONS

Motors which drive the various forms of mechanical equipment used in a modern Pulp and Paper mill, operate in the majority of cases under conditions which are so very severe as to constitute a most rigid test of the varnish and other insulating materials used in their construction.

Moisture and acid fumes are of course the cause of most of the motor troubles, and due to the large amounts of steam and water used for heating, washing and other purposes, the air is always saturated with moisture.

The maintenance and repair problems which are thus presented are further complicated by the fact that anything more than momentary interruption cannot be tolerated. Continuity of service must be maintained at any cost.

The Sterling Electrical Co., of St. Catharines, Ont., have developed for completely rewound motors and generators, a special insulation and varnish treatment that has given excellent satisfaction in several of the Pulp and Paper mills of The Niagara District.

After the Stator coil loop is wound, metal clips are put on the sides to hold the wires in place the loop is then dipped in a special acid and moisture proof varnish, allowed to soak until no more air bubbles are given off. The loop is then allowed to drip until all excess varnish has run off, is then baked for 10 to 12 hours in an electrical baking oven.

Following this the loop is pulled to shape in a special machine, insulated with hight grade varnished cambric and cotton tape, and the complete coil again dipped in varnish, allowed to drip and is then baked for 20 to 24 hours at an approximate temperature of 100° Centigrade. The next operation is to wind these coils, in the Stator; after connections are made the high potential ground and between-phase test is applied for one minute. If the test is satisfactory the stator is placed in the oven and baker for 10 hours, and then immersed completely in a large dipping tank while still hot, allowed to drop and then again baked for 12 to 15 hours. For motors in exposed locations this latter operation is again repeated.

The exact value or worth of this treatment described above combined with careful workmanship can hardly be expressed in figures; "the proof of the pudding is in the eating" and from the very favorable comments received from customers extending over 3 years, rewound motors treated as above have approximately about twice the service of new motors.

BABY "ALLIGATOR" FOR WOODSMEN

Russel Brothers of Fort Frances, Ont., who have been manufacturing the 30 H. P. Motor Head-Works, or Warping Tugs, for the past twelve years have now put on the market a smaller edition of these boats.

The immense power that these little boats have, combined with their light weight and shallow draft, should make them a most useful boat in a mill pond or for rafting and raising booms.

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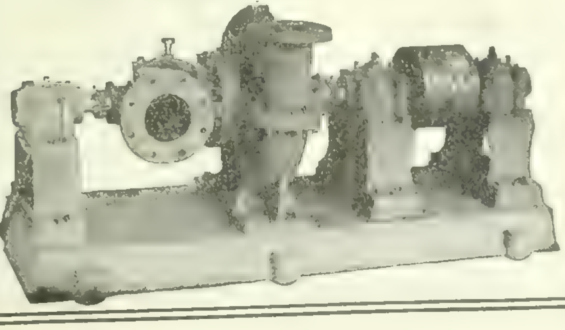

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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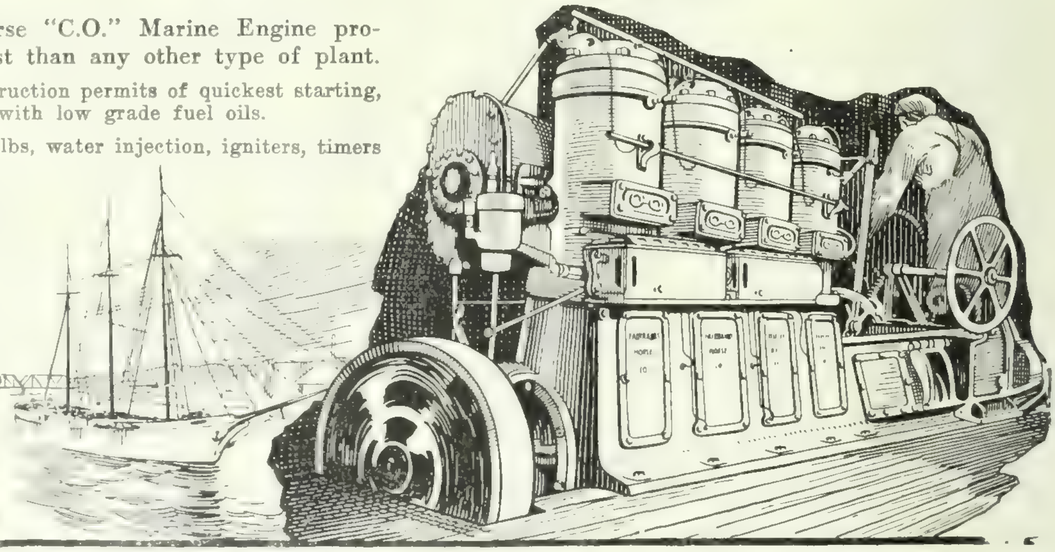

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:-: EDITORIAL :-:

THE PAPER EXPOSITION IN NEW YORK

The solution for what, at times, is a rather embarrassing situation has apparently been found by the Managers of the annual Exposition of Chemical Industries. Realizing that a certain amount of business is always transacted between delegates to a convention and concerns who deal with them, the International Exposition Co. has made arrangements for a Paper Industry Exposition at the Grand Central Palace in New York on the week of April 9th. The Exposition Company has the advantage of the services of an advisory committee which includes national figures in the Pulp and Paper Industry and allied enterprizes and organizations. Many paper men attend the Exposition of Chemical Industries each year, and so important is the Pulp and Paper Industry as a factor in the Chemical Industry, that it has become customary to have a "Paper Day" at the chemical show. A large number of exhibitors at the chemical show have become impressed with the importance of the Pulp and Paper Industry as a user of their products, so that the organization of a really representative Paper Industries Exposition was already pretty well outlined by the group of people who had already come together in connection with the other business.

When one stops to consider the vast importance of paper, as a product required for our daily life and comfort, one wonders why a Paper Exposition has not been thought of before. Paper is a public necessity, and the public is interested in the manufacture and the manipulation of the things it requires. It is surprising, also, to note how little the general public knows about some of these fundamental things, and how eager they are to find out about them once they are given the opportunity. The educational feature of such an Exposition is perhaps its greatest value, but one must not overlook the opportunity it affords for bringing together, at a convenient time and place, the men who are interested in pulp and paper mill equipment and those who have such equipment or material to offer.

A person attending a convention and trying to absorb the interesting points brought out by the speakers does not want to be importuned by a salesman who feels that that may be his only opportunity to made contact with a possible customer during the paper convention; nor does one care to see the lobby of the hotel, where the convention is being held filled with advertising matter or miniature exhibits of machinery and materials. We feel sure that this Exposition will be a complete success. The United States is a big market for Canadian goods, both raw and finished products, and we trust that a number of Canadian concerns will take advantage of this opportunity of introducing themselves to the American public.

WHAT AN INDUSTRY TALKS ABOUT

(Editorial in "Canadian Chemistry and Metallurgy")

We listened in at the tenth Annual Meeting of the Canadian Pulp and Paper Association.

It might have been expected that this half-day, the one half-day of the year in an important industry, would be taken up with affairs having to do with prices and statistics. Instead, the bulk of the time was consumed in discussing three proposals, quite outside those spheres of activity.

The first proposal was to set aside $30,000, to appoint a Director of Research Operations, and supply him with staff and equipment. This was the recommendation of a Research Committee of the Technical Section. It had been decided not to recommend laboratory operations at present, but to co-ordinate and supplement the work being done in mills, which in many cases now overlaps, and, in other cases, cannot be handled by the staff at any one mill.

The second proposal was to employ a forestry engineer, as a special secretary of the Woodlands Section, one of whose chief activities would be to devise, correlate and endeavour to operate, every means possible for the prevention of forest losses by disease, insects and fungi, and to study methods and means for using wood such as budworn-killed spruce. The request was for $10,000.

The third request was for an additional grant of $5,000 to complete the set of textbooks being published by the Joint Committee on Vocational Education of the Pulp and Paper Industry in the United States and Canada, this in addition to $21,000 previously given by the Canadian Association and $23,000 raised in the United States.

The first two proposals were referred back to their Committees for further consideration. The third proposal was accepted.

To us, the importance lies, not so much in the actions taken for the moment, on these proposals, as it does in the fact that such proposals were made, and seriously discussed, taking up a large part of this great industry's Annual Meeting. In the discussions that took place on all three proposals it was evident that opinion was well formed and almost unanimous in the principle that science was essential to industry.

The acceptance of the proposal to place an additional $5,000 in the budget for completion of textbooks was a renewed expression of the attitude of the industry, that all ranks of employees should have an opportunity to study the basic sciences, as applied to the manufacture of pulp and paper. In this way, it will not be many years before the way will be open for close scientific control throughout the industry.

We shall be pardoned, we hope, for referring so frequently to this industry. The fact is, we do not know of any other that, throughout the continent, is tackling its job more efficiently, from the ground up, and with the real good-fellowship that characterizes the pulp and paper industry.

Just note the progress in Canada, for example. In 1900, the industry here employed but two chemists, and one of them had to do draughting to hold his job. In 1913, the Canadian Pulp and Paper Association was formed. In 1915, the Technical Section was organized, and became an integral part of the Association, with about twenty members. To-day, it has nearly two hundred, on a fairly strict qualification basis. In 1918, a joint Executive of the Education Committees of the industry in Canada and the United States, was formed to compile and publish a set of textbooks, to be used for correspondence instruction and as works of reference. For these books, there has been raised almost $50,000, and they comprise the best work of reference published in any industry.

At the Montreal meeting, it was reported that, in Canada, one hundred and seventy men, from manager to "broke hustler" (the junior help in a paper mill), were enrolled as students in the correspondence courses provided in these books, and carried on by a specially organized institute, in the four months since September.

If every other Canadian industry could show similar development, just think what it would portend.

The two technical men employed in 1900 have grown to almost two hundred, in 1923, and another two hundred men are busy studying a systematic course, in the science and technique of the industry.

In addition, there is a well-defined policy for the addition of University men, by vacation employment, and by lecture courses, and the universities are cooperating.

One more thing: This work is surprising, but its best effects required ten years of good-fellowship, and perhaps in that last phrase "Good fellowship" lies the secret.

What about these—Textiles, Leather, Packing-House, Paints and Varnish, Mining, Iron and Steel? We might even include Agriculture and the Canadian Manufacturers' Association itself. Are we really awake to do what we should be doing for ourselves, or are we hoping to get along by borrowing results from American or European leadership, trusting that the Government will do something for our industries that can never be accomplished, except by the industries themselves?

BELGO MACHINE STARTS

Readers of the "Pulp and Paper Magazine" will be interested to know that No. 5 papermachine of the Belgo Paper Co., at Shawinigan Falls is in operation. We have a sample of paper made the first day and in our opinion is a first class sheet of newsprint. A bursting strength test on the sample is marked 12 points. The second day the machine made 59½ tons, and, evidently a disciple of Coue, it runs better and better every day and in every way.

The new Belgo machine was built by Charles Walmsley & Co., in England, except for the suction couch roll of special design which was made by the Dominion Engineering Works at Lachine. The drive is the Harland Patent Interlock sectional electric drive. The trimmed sheet is 216″ wide, delivered at the rate of 750 feet per minute at normal speed. The machine started at 600 feet.

Now that the machine is running we hope it will never be shut down for lack of orders or material.

HIS FATHER SATISFIED

Twenty years ago a discouraged young doctor in one of our large cities was visited once by his father, who came up from a rural district to look after his boy.

"Well, son" he said, "how are you getting along?"

"I'm not getting along at all," was the disheartened answer. "I'm not doing a thing.

The old man's countenance fell, but he spoke of courage and patience and perseverance. Later in the day he went with his son to the "free dispensary," where the young doctor had an unsalaried position, and where he spent an hour or more every day.

The father sat by, a silent but intensely interested spectator, while twenty-five poor unfortunates received help. The doctor forgot his visitor while he bent his skilled energies to this task. But hardly had the door closed on the last patient when his father burst forth:

"I thought you told me you were not doing anything? Why, if I had helped twenty-five people in a month as much as you have in one morning, I would thank God that my life counted for something."

"There isn't any money in it, though," explained the man, somewhat abashed.

"Money!" the father exclaimed scornfully. "Money! What is money in comparison with being of use to your fellow-men? Never mind about money; you go right along at this work every day. I'll go back to the farm and glady earn money enough to support you as long as I live — yes, and sleep sound every night with the thought that I have helped you to help your fellow-men."—Ex.

The Steam Turbine in the Paper Mill*

By A. G. GROUNDWATER

The development of the steam turbine since its introduction to commercial use to its present stage, extending over a period of about thirty years, has no parallel of equal general importance in the history of engineering.

As a prime mover the steam turbine has caused quite a revolution, due to the fact that, not only is it capable of realising the gains due to high pressure and superheat to a higher limit than can the reciprocating engine, but it can also utilize to a very much higher percentage of the gain due to the employment of high vacuum than the latter.

The low initial cost, reduced steam consumption and running cost, small space required, and its application to driving electric generators, blowers, compressors, pumps, mill drives and propelling steam vessels has brought the steam turbine to the leading position as a prime mover.

In addition to the very high efficiency of the high-pressure turbine, the development of reducing or bleeding turbines and back-pressure turbines, with the important advantages derived from same, have led paper manufacturers and engineers to the consideration of the different applications of the steam turbines to paper mill drives with a view to reducing the consumption of coal per ton of paper made, which at its present price is a most serious item. At the present day steam turbines have been installed in a number of paper mills in this country, and I purpose dealing with the methods employed whereby the turbine has been designed and built to give the highest efficiency and economy and will divide the subject under the following three sections:—

1. The application of the steam turbine to mill drives.
2. The utilisation of the reducing or bleeding turbine and back pressure turbine for process work.
3. The advantage of using the reducing or back-pressure turbine.

(1) THE APPLICATION OF THE STEAM TURBINE TO MILL DRIVES

The conditions governing the best method of driving a mill depends chiefly on the lay-out of the mill, and, as we all know, many mills have extended from time to time until the buildings and machinery are very much scattered and at a considerable distance from the steam boiler house. Each mill, therefore, calls for special consideration of its requirements, and the following four designs generally overcome any difficulty regarding site, etc. It should be noted, however, that each installation should be laid down as near the boiler house as possible.

All Electric Drive

When the machinery is very much scattered a high-pressure steam turbine with surface condenser is installed driving a three-phase alternator direct or through reduction gearing to a low-speed alternator, the alternator being designed to supply the motors at their working voltage. In the lay-out of this installation it is of special importance that the motors should be laid down to work at as near full load as possible so as to avoid a low-power factor and loss in efficiency.

With this installation there is a loss of efficiency due to converting the mechanical energy into electricity of 1 1-2 per cent., if the generator is driven through reduction gearing 8 per cent. due to the generator. There is also a loss in transmission through the cables and 8 per cent. due to the motor, making a combined loss of, say, 17 1-2 per cent.

It should be observed, however, that although there is this disadvantage, this loss can be met to some extent and overcome by arranging the motor drives so as to largely eliminate the loss in friction due to heavy main shafting and belting.

Slide Nos. 2, 8 and 9 showed steam turbine driving alternator through reduction gearing. Two views of a condensing turbine direct coupled to an alternator of 1,250 kw. output at 440 volts.

Combination of Mechanical and Electric Drive

Here again this drive is designed to solve the problem of driving machinery which is scattered over the mill, also if owing to structural difficulties the turbine may have to be laid down some distance from the main driving shaft of the breakers and beaters.

This installation may consist of a high-pressure steam turbine with surface condenser driving a D. C. generator through reducing gearing, also driving main shaft of breakers and beaters by means of ropes.

There is also in this installation a loss of efficiency of 17 1-2 per cent. due to converting the mechanical energy into electricity, the loss in transmission through the cables and efficiency of motors, but as stated previously this loss may be to a large extent eliminated in the arrangement of motor drives, etc. There has also to be noted the loss in friction due to the rope drive.

Slide No. 7 showed steam turbine driving through reduction gearing D. C. generator and rope pulley driving the mill mechanically.

Mechanical Drive Through Reduction Gearing And Ropes

This arrangement consists of a high-pressure steam turbine with surface condenser erected midway between two main shafts for driving two lines of breakers and beaters, the two main shafts being driven by ropes from the reduction gear wheel shaft.

This arrangement is also adopted where, owing to structural difficulties, it is impossible to connect the reduction gear wheel shaft direct to one main driving shaft of breakers and beaters.

Slide No. 6 showed steam turbine driving main shaft through ropes.

Mechanical Drive Through Reduction Gearing

This is an ideal and economical drive for driving a main shaft of breakers and beaters. It consists of a high-pressure steam turbine, surface condensing, coupled direct through reduction gearing to main shaft, the speed of turbine being, say 500 r. p. m. and reduced by means of the gearing to, say, 300 r. p. m.

If the turbine is replacing an engine it necessitates, owing to the higher speed (the only shaft probably ran at 80 r. p. m.), the installation of a new smaller, and therefore lighter, main shaft, roller bearings or ring oiling bearings, steel pulleys, making in all a first class and most efficient drive.

---

* This paper, illustrated with slides lent by Messrs. C. A. Parsons & Co., Ltd., Newcastle-on-Tyne, was read at a recent meeting of the Aberdeen District of the Technical Section of the Paper-makers' Association, and is reprinted from The Paper Maker and British Paper Trade Journal.

Here we do not have any electrical losses due to the double conversion and transmission losses.

With regard to the reduction gearing of the steam turbines, Messrs. C. A. Parsons and Co., Ltd., supply with their turbines a most efficient, noiseless and reliable gear. The gearing is of the single reduction double helical type totally enclosed in a cast iron case. The pinion, shaft and the rim of the gear wheel is made of a special steel having the teeth accurately cut by special plant invented by Sir Charles Parsons, in which is introduced a supplementary creeping motion on the table carrying the gear wheel which is being cut. This creeping motion, by eliminating all errors in the cutting of the teeth, removes objectionable noise and wear. The gear is arranged for lubrication by means of oil sprayed on to the teeth under pressure. The special method of cutting the gear and the forced lubrication gives a very high efficiency of transmission. The results of tests on this type of gear show an efficiency of 98 1-2 per cent. at full load. See Sample Pinion.

Before passing from this section I might be allowed to make comparison between the reciprocating engines and the steam turbines.

Steam turbines require far less foundations and no holding down bolts; the machinery is much lighter and sits upon a concrete floor. If a breakdown occurs to the blades an ordinary size turbine can be rebladed complete in 10 days. There is nothing else to go wrong except the spindle, *i. e.*, the main shaft, or, in the case of a reduction gear turbine, the gearing.

In reciprocating engines there is liability to accident with flywheels, cylinders, connecting rods, cross heads, valves, etc., besides the crankshaft. In other words, a breakdown in a steam turbine can be repaired in a much shorter time than in the case of a reciprocating engine.

There is not much difference in first cost, the advantage being slightly in favour of turbines however.

There is great saving in the foundation owing to the lightness of the plant and the absence of holding down bolts, the only holding down bolts required being at the gear box in the case of reducing geared machines. In initial steam economy with saturated steam and ordinary vacua there is not much difference between the best reciprocating engine and a good steam turbine plant. The latter, however, can take full advantage of super-heated steam and high vacua which is impossible with the reciprocating engine. Also, after running for a short period a reciprocating engine generally shows some defects and steam leakage which increases with years. In a steam turbine there is no machinery to get out of order, no glands to leak, no cylinders or valves to wear. The only valve requiring care is the steam admission valve which could be reground in a very short time.

The much higher speed obtainable by steam turbines without any shock, as on the cranks of a reciprocating engine, makes the turbine plant specially suitable for electric work and high-speed mill drives.

As steam turbines can fully utilise high vacua, good condensers are most essential as the following will show:—

With a surface condenser a vacuum of 28.7 inches is easily obtainable whilst the jet condenser would average 26.5 inches vacuum.

The small difference of 2.2 inches vacuum means a saving of 10 per cent. in coal. This difference would not hold good relatively at the lower vacuum figures. In other words, the better your vacuum the greater relative economy in steam consumption.

The exhaust steam from the turbine is quite free from oil. Therefore, with surface condensers the condensed water can be returned to the boilers which means a further saving in boiler cleaning and upkeep.

There is also to be noted the difference in the cost of lubricating a reciprocating engine as against a turbine. In the case of the reciprocating engine, in addition to the bearings, the cylinders and valves, require constant lubrication, whereas in the steam turbine there are only the bearings, also the gearing of a reduction gear turbine.

The method of lubricating the bearings of a turbine are most simple, efficient and economical. The bearings are lubricated by oil under pressure from a valveless rotary oil pump, driven by means of a worm and worm wheel shaft from the spindle.

The pump is made sufficiently large and powerful to automatically keep all the bearings of the complete set well supplied with oil at and over the desired pressure. The oil pump is always flooded with oil which passes from the bearings into the bedplate which serves as a reservoir, then through the strainer which can be changed whilst the turbine is running and back into the tank in the bedplate where the oil level is above the pump's suction. The oil is also cooled on its way to the bearings by passing through an oil cooler, containing tubes through which cold water is circulated and amongst which the steam of oil is distributed with consequent loss of heat.

(2) THE UTILISATION OF THE REDUCING OR BLEEDING TURBINE AND BACK-PRESSURE TURBINE FOR PROCESS WORK

In most paper mills large and fluctuating quantities of steam are required for boiling, drying, evaporating and heating purposes. The steam, with the exception of the exhaust steam from the making machine engine, is supplied from steam boilers, in the case of high-pressure boilers through reducing valves, or from steam boilers working at the pressure required for boiling or heating.

Assuming that the quantity of steam required to drive any of the four methods of driving a paper mill is equal to or more than the steam required, say, for boiling, then by installing a reducing or bleeding turbine, such as Parsons parallel flow steam turbine, such steam required for boiling would be supplied from the turbine by tapping the turbine at the point where the steam has expanded to the pressure required for the boiling system. Slide 1 showed an outside view of a reducing turbine, and Slide 2 showed the longitudinal section of turbine.

At the point A all the steam flowing into the turbine is passed into an automatically regulated chest.

The steam required for boiling purposes is carried away by the pipe C, but any surplus steam is returned to the turbine at B, passing through the double-beat valve (Slide 3), thence to be usefully expanded down to the condenser vacuum.

The automatic operation of the return valve is affected by means of the steam relay (Slide 3), which is controlled by the pipe P by a slight difference in pressure in the pipe C; for the greater the demand for boiling steam the more the pressure at C tends to drop, and *vice versa*.

It will thus be observed that if all the steam is required for boiling, the turbine would be acting as a back-pressure turbine, *i. e.*, exhausting all the steam into the L. P. main which supplies steam for boiling.

On the other hand, if no steam was required for boiling purposes the turbine would act as an ordinary condensing turbine.

Between these limits, therefore, whilst the turbine is working at full load any quantities of steam can be taken off, if called for, two separate pass-off chests can be provided, each chest delivering steam at the desired pressure and in varying quantities.

Assuming again that the quantity of steam required for power is much less than the quantity required for boiling or drying purposes, then a simple back-pressure turbine should be installed, designed to exhaust into a low-pressure main at the required pressure, thus dispensing with the low-pressure blading and condenser.

It should be noted that all the steam passing from the turbine is quite free from oil, and, therefore, a pure supply of steam is ensured for boiling purposes.

(3) THE ADVANTAGE OF USING THE REDUCING OR BACK-PRESSURE TURBINE.

The advantage of using a reducing or back-pressure turbine and allowing the steam to do useful work during its expansion from the boiler pressure and temperature down to the pressure and temperature required, say, for boiling purposes, instead of passing the steam from the boilers through a reducing valve into the low-pressure main is most important, and taking a hypothetical case, comparing the one method with the other, will show the direct saving occurring thereby.

1. Assuming that 1,000 Board of Trade units, equal 1,000 kw., are required for driving the mill.

2. That the steam pressure for driving the turbine is 200 lbs. stop valve pressure, superheat 200 deg. Fah., and that a vacuum of 28 ins. can be obtained. The steam consumption per kw. hour would be 14 lbs.

3. Assuming that 7,000 lbs. steam per hour at a pressure of 25 lbs. absolute is required for boiling purposes in the mill the following statement shows the heat required:—

(4) High Pressure Condensing Turbine As Above	
British thermal units required by turbine 1,000 × 14 × 1.310	18,340,000
Boiling steam supplied by low-pressure boilers 7,000 × 1,156	8,092,000
Total B. Th. U.'s.	26,432,000
5. Extraction turbine, No. low-pressure boilers for supplying boiling steam required.	
Boiling steam extracted from turbine at 25 lbs. absolute at temp, of 300 deg. Fah 7,000 × 1,310	9,170,000
This steam in its progress through the turbine has developed 225 kw., consequently to make up 1,000 kw., the turbine has to generate a further 775 kw. 775 × 14 × 1,310	14,213,000
Total B. Th. U.'s	23,383,000
A.—Saving by installing an extraction Turbine	3,048,500

B.—SAVING IN COAL PER HOUR

Assuming:—

Coal at 13,000 B. T. H. per lb., dry coal.

Coal containing 10 per cent. moisture, as fired

A boiler efficiency of 75 per cent.

The coal consuption per 1,000 B. Th. U-s.

$$\frac{1,000}{13,000 \times .9 \times .75} = 0.114 \text{ lb.}$$

$$\text{The saving in coal} = \frac{.114 \times 3,048,500}{1,000}$$

$$= 348 \text{ lbs. per hr.}$$

C.—COAL SAVING PER ANNUM.

Assuming the plant works:—

300 days per year.

24 hours per day.

348 × 300 × 24 = 2,505,600 lbs. = 1,118 tons.

D.—SAVING IN COST OF COAL PER ANNUM.

Assuming coal at 40s. per ton.

1,118 × 2 = £2,236.

E.—CAPITALISED VALUE OF COAL SAVING.

Assuming 7 1-2 per cent. interest.

Assuming 5 per cent. depreciation.

$$\frac{2,236 \times 100}{7.5 \times 5} = £17,800.$$

NOTE

(a) It will be observed that 225 kw. can be obtained from the 7,000 lbs. of boiling steam in proposal 2.

(b) The above does not take into account any saving due to labour, etc., by only running one set of boilers.

(c) An extraction turbine can be designed to pass off steam at any required pressure or simultaneously at two different pressures.

In large boiler plants steam turbine rotary driven feed pumps are now often employed and are very advantageous on account of the freedom from shocks in the pipes and that they do not require to be adjusted in speed to suit the feed demand which are the chief objections to the direct-acting feed pumps which cause a large amount of the vibration in the feed pipes and require a considerable amount of attention on the constant adjustment of speed to suit the feed water demand.

The steam turbine rotary driven feed pump can work without internal lubrication so that the exhaust steam is not contaminated with oil or grease, and for this reason can be utilized for directly heating the feed water. In working a boiler plant with these feed pumps the feed demand is regulated in the usual manner by means of the feed valves on the front of the boilers and no attention requires to be paid to the pump itself as regards regulation, and, as a matter of fact, the whole of the feed valves can be fully closed with the pump at work without increasing the pressure of water in the feed pipes due to the special automatic pressure governor which maintains a constant discharge pressure at the pumps irrespective of any ordinary fluctuation in the steam pressure or in the quantity of water discharged. This pressure governor comprises a spring loaded piston operated by the pump discharge and directly connected to a balance throttle valve which controls the supply of steam to the turbine according to the load on the pump.

MAKING PULP IN ALASKA AGAIN

The pulp mill of the Alaska Pulp and Paper Company at Speel River which ran for a couple of months early in 1921 and then closed down is again operating on a contract for its output which is reported to extend throughout most of 1923.

The mill consists of two four pocket grinders and is in the Tongass National Forest near Juneau, the wood coming from the National Forest. A picture of the plant was printed in Monthly Bulletin Number 39, April 15, 1921.

THE VALUE OF INSULATION OF STEAM PIPES

The insulation of steam and hot water pipes in pulp and paper mills has received considerable attention during the past few years. Radiation losses from individual steam pipes are not exceptionally noticeable, but when taken in the aggregate, represent a loss that is worthy of careful study. The cost of steam per ton of newsprint paper represents approximately 40 per cent. of the conversion cost and any reduction of steam losses will have an appreciable effect on the manufacturing cost.

Detailed experimental investigations upon the heat losses from bare and covered wrought iron pipes have been made and show some very interesting facts. The set of curves on heat losses here shown is derived from investigations of Mellon Institute at Pittsburgh, and is converted to pounds of coal wasted per 100 lineal feet of bare pipe per month at varying temperatures and pipes sizes. The average room temperature during the investigation was 81° F.

The curve representing hot water at 180° F. is very close to the usual feedwater temperatures. A 3½-inch pipe shows a total heat loss of about 1 ton of coal per month per 100 feet of bare pipe.

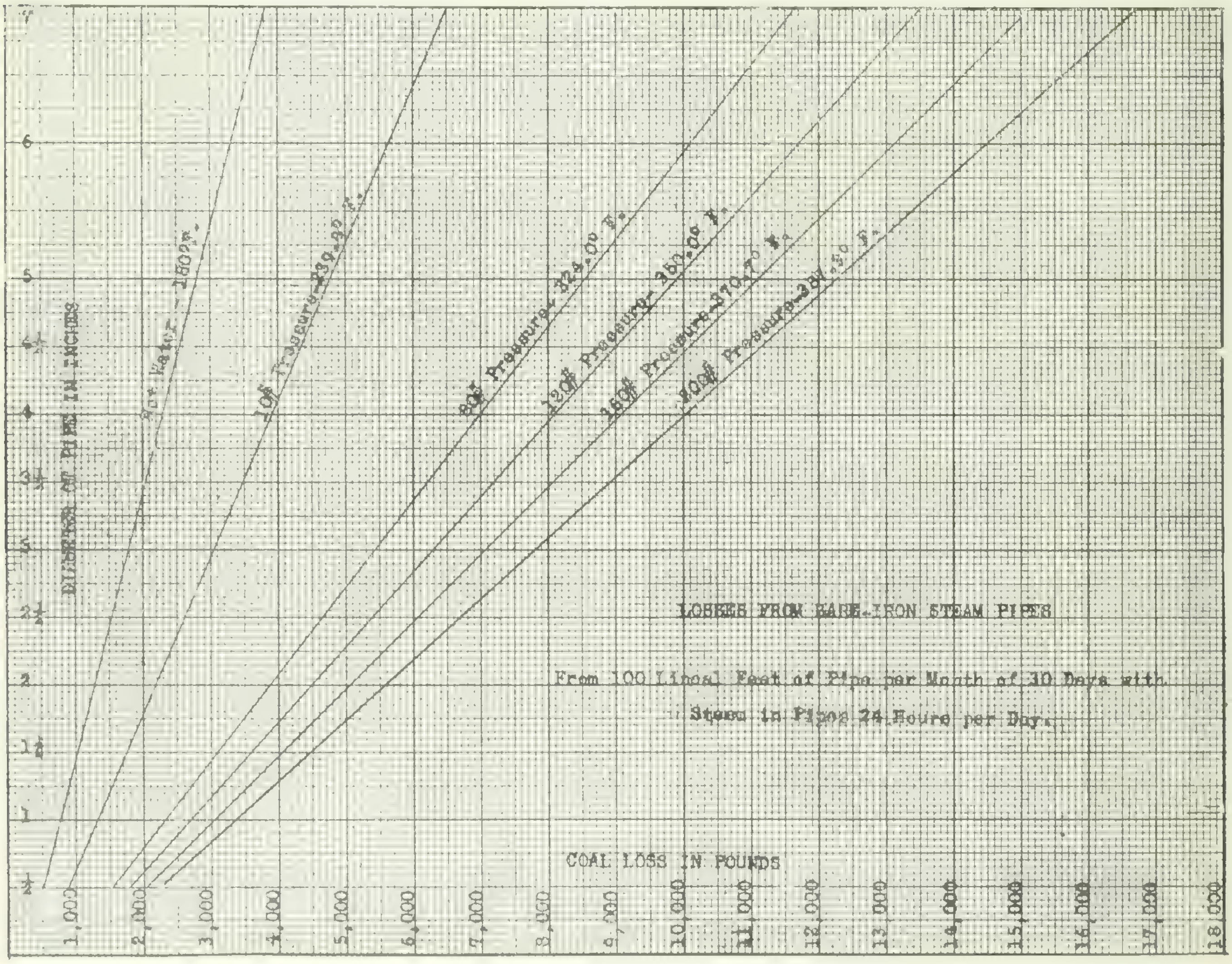
The 10-pound pressure curve, which is about the pressure of exhaust steam to the paper machines, indicates a loss of 4,000 pounds of coal per month from a 4-inch bare pipe 100 feet long.

The other four curves represent varying pressures of saturated and superheated steam. The losses appear to increase in proportion to the size of pipes and the pressures carried. An inch pipe 100 feet long at 80 pounds pressure shows a loss equivalent to 5 tons of coal per month, at 120 pounds pressure nearly 6 tons, at 160 pounds pressure over 6½ tons, and at 200 pounds pressure about 7¼ tons. The losses at greater pipe sizes than shown on the curves appear to follow a straight line and to increase in direct proportion.

All figures are based on the losses from bare horizontal wrought iron pipes and although very few mills fail to cover their high pressure steam lines, the losses incurred from failure to properly insulate steam and hot water lines of all sizes is clearly emphasized. Moreover, if pipes carry steam from one building to another or through rooms having a low temperature, added precaution should be taken to provide insulation that will minimize the radiation losses.—G. D. B.

The Pulp & Paper Magazine is indebted to the News Print Service Bureau for permission to reprint this article from their Bulletin, and for the illustration. —Ed.

Mr. Edwin Crabtree, of Crabtree Mills, P.Q., one of the veterans of the Canadian paper trade, is in the Ross Memorial Hospital, Montreal, suffering from an attack of poisoning. He is slowly recovering.



The Market In Italy For Wood-Pulp

Trade Commissioner W. McL. CLARKE

Milan, January 23, 1923.—Not only is papermaking one of Italy's foremost industries, but this manufacture bids to become increasingly more important in the next few years. In 1913 there were some 169 Fourdrinier and 200 cylinder machines at work in Italy, and although very few plants have been laid down since pre-war days, some of the largest paper mills are now negotiating for the purchase of new installations. Italy, it is true, is not independent of foreign paper supplies, as has been pointed out by the writer in a recent report, but at the same time the country produces a considerable quantity of paper products and even exports to Latin America, Egypt, and the Levant.

Now this Italian paper manufacture may largely be described as an artificial industry, inasmuch as the country has had to buy abroad the greater part of its raw materials for the making of paper. Chemical wood-pulp, machinery and supplies, fuel and chemicals in pre-war days were practically all imported, and only in mechanical wood-pulp was the country able to meet the major part of its requirements. These conditions still largely persist, and the purpose of this report is to call attention to the openings in Italy for Canadian wood-pulp.

Mechanical Wood-Pulp

It is calculated that the Italian paper industry at present uses about 70,000 metric tons of mechanical wood-pulp per year, and of this amount some 60,000 metric tons are produced locally. This is a gain of some 20,000 metric tons on the pre-war consumption. What mechanical wood-pulp comes into Italy is mostly obtained from the nearby Austrian territory, and the writer does not consider that these purchases, given the proximity of Austria and the distance of Canada, merit a Canadian effort.

Chemical Wood-Pulp

As regards chemical wood-pulp, however, the inference is exactly the reverse. In the first place, chemical wood-pulp production in Italy is virtually negligible. The consumption of chemical wood-pulp, in other words, about equals the quantities imported from abroad. There are only two establishments in Italy, where very small quantities are made, and these plants are connected with the self-same worked paper mills. As a matter of fact, even this cellulose is neither soda nor bisulphite, but is manufactured with the chemical, chlorine, with either straw, hemp fibre or sparta grass as the basis. The dependence of Italian paper makers on foreign sources of supply for chemical wood-pulp was clearly reflected during the war, when imports fell off to one-fifth of their normal level, and when the daily newspaper, for example, appeared four times a week in the form of a single sheet. Rags, waste paper, and more mechanical wood-pulp were utilized, but the country could not turn out an extra roll of the chemical pulp. Not only this, but so far as the writer can ascertain from authoritative sources, there is little likelihood of Italy building up an important cellulose industry in the near future. The tendency is rather at present to expand the establishments of mechanical wood-pulp and paper interests are urging the extended cultivation of the Canadian poplar tree to this end. It would appear therefore that the opening for chemical wood-pulp need not be considered as temporary but that the market will continue to exist.

Minimum and Maximum Requirements

What then in approximate figures are the country's requirements of chemical wood-pulp? In 1913, some 86,000 metric tons were imported; in 1920, about 60,000 metric tons; and in 1921, about 37,000 metric tons. Between these two extremes it is evident there is a wide gap, and even the 1920 imports vary considerably from those of the other years. The Government trade statistics for the first six months of 1922, which have just been published, show, however, that during this period about 34,000 metric tons, were employed, and if we multiply by two we would expect the entire imports of last year should total about 68,000 metric tons, which estimate is nearer the 1913 imports than any year since the war. From inquiries made, however, it would appear that the imports for the last six months of 1922 will be larger than for the first six months and, if this estimate is eventually confirmed, the 1922 imports will be still nearer the 1913 imports, and will probably reach at least 75,000 or 80,000 metric tons.

To put the matter briefly, the writer would be inclined to think that, leaving out of consideration abnormal years, the chemical wood-pulp requirements of Italy may now be placed at a minimum of 75,000 tons and at a present maximum of 85,000 metric tons. It might, however, be added that the writer is further of the opinion, formed after various local interviews, that the present maximum leaves but little margin and that a not distant maximum will reach 100,000 metric tons per year.

Countries of Origin

In 1913, of the 86,000 metric tons of chemical wood-pulp imported into Italy, Germany supplied 38 per cent., Austria 37 per cent., and Norway 17 per cent., with smaller contributions principally from Sweden, Switzerland, and Roumania. When these percentages are compared with the corresponding ones of the first half of 1922 there is not noticed much change in the general direction of the trade. From January to June, 1922, some 34,00 metric tons were imported, and of this quantity Germany furnished 33 per cent., Austria 19 per cent., Czecho-Slovakia 11 per cent. (i.e. old Austria 30 per cent.), Sweden 24 per cent., Norway 6 per cent., while the rest, or 7 per cent., came forward from Switzerland, Holland, Jugo-Slavia, Canada, and Belgium. To generalize then, we find that Italy's principal sources of wood-pulp supply have been up till now Central Europe and Scandinavia. It is significant, however, that whereas Canada is credited with no chemical wood-pulp in 1913, some 205 tons are shown as coming from Canada during the first six months of last year. In fact, since 1920, small shipments of wood-pulp have occasionally been made from Canada to Italy, and now that a beginning has been made it would seem worth while to endeavour to cater permanently to this market. We should push on a little further every year, if at all practical, and not make retrograde steps once we have gone forward in this specific export to Italy.

The Kinds of Chemical Wood-Pulp Required

The Italian market calls for bleached bisulphite, unbleached bisulphite, easy bleaching bisulphite, strong soda kraft, bleached soda, and easy bleaching soda. The degrees of dryness which the papermakers insist upon having is 88 to 90 per cent.

[A clear idea of the kinds of wood-pulp required and present ruling c.i.f. prices is contained in a price list appended to the original of this report. Copies of such list can be had upon application to the Director, Commercial Intelligence Service (quoting file No. 3-115), and shows country of origin, quality, prices, and degree of dryness for varieties of wood-pulp imported by one of the largest wood-pulp importing firms in Italy.]

Packing of Chemical Wood-Pulp

Chemical wood-pulp in sheets is as a rule preferred in Italy to cellulose in rolls. The parcels come forward from Germany and Scandinavia in weights of one or two quintals. Only the finer qualities are packed in Jute or cloth coverings, the other grades being protected with sheets of cellulose and bound with iron wire.

Terms of Payment and Tariff

The usual terms of payment for imported wood-pulp is thirty days with 2 per cent. discount. The Italian customs duties on chemical wood-pulp are 20 gold lire per metric ton.

Statistical Imports

The most recent imports of chemical wood-pulp into Italy are reproduced hereunder:—

Austria	6,515
Belgium	20
Czecho-Slovakia	4,065
Germany	11,265
Norway	2,121
Holland	291
Jugo-Slavia	294
Sweden	8,370
Switzerland	716
Canada	205
Other countries	200
	34,062

Although some Canadian wood-pulp business has been done in Italy, it does not bulk up largely, and although many Canadian firms have been approached by Italian importers, the results so far have not been permanent, nor entirely satisfactory. It may be, however, that our prices, even with a disadvantageous exchange rate, will not be beyond limits of Scandinavian competition, and that a new initiative will bring business. Apart from the paper industry, there is an important artificial silk industry in Italy, and this combined market, the writer believes, merits Canadian attention. In case of interest, this office will be pleased to receive small samples, specifications, and c.i.f. prices Genoa, which together will be of assistance in endeavouring to introduce Canadian exporters of wood-pulp to the leading importers here. —Commercial Intelligence Journal.

BRITISH TRADE COMMISSIONER MOVES

The Office of the British Trade Commissioner is being moved from its present location, 248 St. James Street, and from Monday next, 5th March, will be installed in its new quarters in the building of the Guarantee Company of North America, 285 Beaver Hall Hill. (Room 503, Telephone Number, Plateau 765.)

In the course of an interview, Mr. A. M. Wiseman, at present in charge of the office pending the arrival of Mr. R. W. Dalton, the newly appointed Trade Commissioner, stated that he had experienced considerable difficulty in finding accommodation suitable for the purpose, at the same time having due consideration for the economy that is still necessary for all British Government offices to effect. He believes, however, that in its new location, in a modern office building and somewhat nearer the uptown district where a great deal of its work lies, it will be possible to increase the efficiency of the office among more pleasant surroundings.

Mr. Wiseman states that the use that is now being made of the office of the British Trade Commissioners in Canada by all classes of the commercial community is most encouraging, and he believes that it is now more widely appreciated that it is the desire of the Commissioners, so far as they can, to assist in every way the progress of the Dominion.

B. C. ROOT MAKES A MOVE

In conversation with him on Wednesday, the editor was surprised to learn that Mr. Root is severing his connection with the Hydraulic Machinery Co., of Montreal today (March 1). Mr. Root was born in a paper mill town — we know when, and has been interested in this industry all his life. After long service with the Improved Paper Machinery Co., of Nashua, N.H., he came to Canada 13 years ago as assistant to the manager of the Sherbrooke Machinery Co. Five years ago, he joined the Hydraulic Machinery Co. which superseded the Pulp Mill Machinery Co. and it is safe to say there is not a sales engineer who knows more about pulp mill machinery, from valves to drying machines than B. C. Root. We don't know what he plans to do next, but we do know he will make a success of it.

The man who never made a mistake never made a dollar. But the successful man never makes the same mistake twice.

It is possible for a man to drive a motor car so far in two minutes that he can never return.

(*Toronto Daily Star*)

The Two Factors in Industry

Are We Giving Enough Attention to the Human Factor?

By PHIL M. CONLEY

In "Industrial Management"

Yes, there are only two factors in industry; the material and the human. The material consisting of buildings, machines, tools, mines, mills and money, has attracted about ninety percent of the industrial grey matter in this stupendous industrial age. The human factor, consisting of the great army of men, women and children who toil year after year with the material factor, has been dealt with to a large extent by ignorant foremen and others who have not understood the art of handling people.

Illustrations of this fact may be observed on every hand. I was sitting in the office of a plant manager recently when one of his subordinate executives came in. He said: "Mr. Jones, that new motor we have just installed is out of order. I wish you would take a look at it."

"Sure," replied the manager, "just step into the chief engineer's office and tell him to call for me in thirty minutes."

We continued talking. Within fifteen minutes after my friend promised to look at the motor, his secretary opened the door and told him a workman wanted to see him.

"What does he want?" asked the manager in an irritated tone.

"I think he wants to discuss a mistake in his pay," said the secretary. "But he insists on seeing you."

"Tell him to go to the pay-roll clerk," said the manager. "I haven't time to listen to every complaint those fellows think they have. I wouldn't get anything else done if I stopped every time some peeved workman wanted to see me."

Machinery. Yes, he had time to look at a complaining motor. Human machine. Well, let some hundred dollar clerk patch up the difficulty.

The machine cost money. This manager thought the workman cost nothing except what he paid for his services. But he was mistaken. The most expensive items in any business concern are the employees. They are the most delicate and mose difficult to adjust properly.

There is no mystery about the adjustment. Many employers have learned the secret. It is simply the old recipe: "Treat them human." They will respond and remember. On the other hand they will respond and remember the other treatment also.

When a man leaves a position on account of some wrong or imagined wrong, he becomes a very important liability, not only to the concern for which he has worked, but to all industry. He curses the particular concern and the employers as a class. I know, because I have done that very thing.

But the human treatment leaves a good taste. I was in Louisville recently, and a friend took me out to his mill for lunch. We went into the cafeteria he had fitted up, and sat down where the workmen were eating. My friend, the president and owner of the concern, told me that frequently he went to the table with some of his laborers.

When we had finished eating he took me to his office and described his profit sharing plant he had worked out thirty years ago. While we were talking, a workman opened the door, hesitated a minute, and my friend asked him to come in. After we had been formally introduced, the workman asked some question and left.

"My door stands open for the members of my family. All of my employees consider themselves members of my family. I would give any man a thousand dollars to induce that man to leave my employ for ten dollars more on the week. He has been with me twenty years. He thinks as much about the success of this concern as I do." How different! The essential factor in this mill was the human. This man had built up a family spirit. And he confessed to me that he had been immensely benefitted personally by keeping friends with his employees.

I was in Washington a few days ago. As usual, I went to the Capitol to call on the senior senator from our state. His secretary told me he was busy but would see me in a few minutes.

Soon the door to his private office opened. "Well, well, I am glad to see you," the senator said grasping both my hands. "Come right in and have a chat. I haven't seen you for a long time." We engaged in small talk for about fifteen minutes. I then told him I wanted to visit the senate. He said: "I'll take you up and get you a good seat in the reserved gallery."

He told the door-man that I was his guest, and that I should be admitted that afternoon if I cared to come back to hear him speak on the Tariff measure. He then left me with the statement that he would be glad to do anything further he could to make my visit pleasant.

How different from the first employer mentioned. The senator recognized the value of personal contact. He knew human nature. He realized that courtesy coming from him would mean a great deal more than if it came from his secretary or someone else whom he might designate.

Politicians recognize the value of a hand-shake, a slap on the back and a friendly smile. They know that their influence and their chances for re-election depend to a large extent upon their ability to keep their constituents thinking well of them.

Why cannot this fundamental principle of psychology be applied universally to industry? Why cannot managers of industrial concerns learn that contact, and personal interest in little matters, make loyal workmen? And it has been proved many times that such a policy pays big dividends.

I have a friend who is the cashier of a large bank. Recently he took me to see a new building the bank is erecting. "Here is my desk," he said to me just after we had entered. "Tell me why you bankers have your offices out front where everybody coming in will have access to you?" I asked. "Won't people coming in bother you a lot?"

"Yes, I will be bothered some," he said. "But we have found that the cashier who gives personal attention to his customers is the one who is serving his bank most efficiently. You may be interested to know that I spend many of my spare hours studying late books on psychology."

I wondered why that attitude could not be applied to every business concern. The good will of the bank's customers was of so much importance that the manager sat out front to welcome them.

How about the good will of the employee? He is a customer in very much the same way the depositor in a bank is a customer. By his services, for which he receives a consideration, he renders a profit to his employer. He would be a much better customer if the employer would give him a slap on the back and a cheery word occasionally.

The cashier of the bank realized the value of personal contact and good will. But strange as it may seem, most employers shun personal contact with their men. They hide behind the excuse that they cannot afford the time.

The man who has not the time to see his workmen when they come to his office or call upon him under other circumstances, is one who is losing money for his company every day. He has not learned how to manage his business properly.

There follows dissatisfaction, discontent and a disgruntled attitude—all of which promotes strikes, lockouts, misunderstandings, closing down of industries, clogging the wheels of progress, and finally industrial warfare with employers' organizations lined up on one side behind corporation lawyers with injunctions and other legal procedures; on the other side, labor leaders who are frequently socialistically radical. Then industry, employees, and the public suffer.

What is to be done? Here is one thing. Our technical schools and universities that train executives for industry, have many courses on how to manufacture products, how to sell products, how to do the engineering work, and how to look after the finances. But there is little or no attention paid to the subject of how to handle men. Yet every practical executive you meet will tell you that the biggest job in industry — in fact in about the ratio of 7 to 3 — is that of handling employees.

Then, too, large industries must select as executives men who have the knack of making friends with employees. They know the work of the concern thoroughly, but they are not able to direct men. It is much better to have a boss who does not know so much about the details of the job, but who does know how to sell good will to the employees.

We have the material factor in industry; and we have the human factor. The wise man who wants his firm to succeed devotes more attention to the latter than to the former.

BELGIUM PROHIBITS EXPORTS OF WASTE MATERIALS

A cablegram from the London Office of "The Daily Mail Stock Reporter" stated that the exportation of all waste materials had been prohibited from Belgium, a Government decree having been issued to this effect. Belgium has recently been a large source of supply of papermaking rags for the United States, as well as other waste materials.

CHEMICAL EQUIPMENT COMPANIES OFFER COOPERATION

The Chemical Equipment Association, comprising manufacturers of the diversified equipment used in the twenty or thirty chemically controlled American industries, which recently began a national work for the advancement both of chemical equipment interests and the interests of the industries which its members supply has now begun some very important industrial work in support of these purposes, according to announcement just made by its Board of Directors.

The announcement is accompanied by an appeal for co-operation in an informational way by the associations in each of the great industries which manufacturers of chemical equipment supply.

President Peirce D. Schenck and the Board Directors of the Chemical Equipment Association have announced that E. H. Froman, Fuller Lehigh Company, Hamilton Allport, E. B. Badger & Sons Company and Hubert Royer, General Ceramics Company, the Association's committee on standardization, are prepared to cooperate with the users of chemical equipment in any of the American industries in working towards the standardization of trade phrases and in the collection of information leading to simplification and standardization in designing and constructing chemical equipment.

Similarly, it has been announced that J. W. Spotten, United Lead Company, H. N. Spicer, The Dorr Company and H. P. MacGregor, The Mirrill Company, the Association's committee on business extension, in addition to present cooperation with the United States Department of Commerce and with other government departments and agencies in activities leading to the more profitable employment by the country's industries of modern chemical equipment, are prepared to collect information on comparative uses of given types of equipment.

According to the Chemical Equipment Association, it is believed that this activity can result in an incalculable benefit to industry as a whole, inasmuch as through it various methods and processes used in connection with chemical equipment in one manufacturing industry but unknown in other industries may be made known elsewhere, and with minor adaptations required, profitably adopted in such other industries.

The Board of Directors announces also that the Association's statistical committee, comprising R. Gordon Walker, Oliver Continuous Filter Company, C. W. Pearson, Buffalo Foundry & Machine Company and P. S. Barnes, the Pfaudler Company, is inaugurating, in connection with various statistical agencies throughout the country and government departments, a compilation of the vital statistics of employment of equipment in the great range of industries using chemical and processing apparatus. The cooperation of associations in the manufacturing industries concerned is requested, in behalf of this committee by the Association. The Association believes that the collection of these statistics, in any complete or reliable form non-existent today, will enable the more economical preparation of equipment for users and its more economical purchase by them.

The Chemical Equipment Association welcomes and requests the cooperation of individuals, companies or associations in a position to assist in the work of its important committees. These may communicate with the Association at its executive office, 1328 Broadway, New York City.

GOOD GAINS IN PAPER EXPORTS

A special report just issued by the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for January. The total value of our exports of these commodities last month amounted to $10,298,243, being a little greater than for the previous month and an increase of $1,466,763 over January, 1922.

Details for the month are as shown in Table I.

It will be noted that our newsprint exports increased considerably over those for January, 1922, both in quantity and value, while book paper exports showed a very much greater increase, being 4,162 cwts. compared with 118 cwts.

Our exports of wood-pulp showed a good increase as regards quantity, but this increase was not fully shown in the values owing to lower prices.

The principal countries of destination of these exports in January were as under:

	Paper	Pulp	Total
United States. .	$6,227,481	$3,058,705	$9,286,186
United Kingdom.	135,893	360,103	495,996
Other countries. .	241,601	274,460	516,061
	$6,604,975	$3,693,268	$10,298,243

Exports of pulpwood for January were 133,328 cords, valued at $1,195,886, compared with 66,094 cords, valued at $696,943, in January, 1922.

Figures for the first ten months of the fiscal year show appreciable gains over the corresponding period of the fiscal year 1921-22. Newsprint exports were almost 50 per cent. greater, book paper exports were more than doubled and wood pulp, exports were greater by about 40 per cent.

Details are given in Table II for ten months to January 31st.

Pulpwood exports for this period were 883,139 cords, valued at $8,906,091, compared with 630,540 cords, valued at $7,926,536, for the corresponding period of 1921-22.

GROWING USE OF PAPER CONTAINERS

In the near future, says the London "Times Trade Supplement," the house-wife will refuse to buy any domestic commodity which is not wrapped and sealed in a sanitary paper container. This may appear to be a bold statement, but the public is gradually becoming aware of the fact that one of the best guarantees of the purity of foodstuffs is the sealed and proofed paper package of a reliable house. The obvious result of this tendency is that the trade demand for efficient and attractive forms of paper boxes and bags will increase.

Four varieties in particular of this ubiquitous form of paper packing will find very extensive development during the next ten years. They are the fibre-board packing-case for the transit of merchandise by rail or sea; the carton, or folding box, for the packing of all manner of solid foodstuffs; the composite container, or round box, for holding powdered and semi-liquid articles; and the waxed paper wrapper, or bag, for bread, cake, and similar edibles. Such development must improve the nation's trade in general, just as the remarkable achievements in the production of artistic chocolate boxes has been an enormous factor in the development of that industry.

Table I

PAPER

	January, 1922		January, 1923	
	Cwts	Value	Cwts	Value
Newsprint	1,354,024	$4,966,352	1,655,783	$6,134,827
Book paper	118	784	4,162	26,077
Other paper	....	410,329	....	444,071
Total	....	$5,377,465	....	$6,604,975

PULP

	Cwts	Value	Cwts	Value
Sulphate	196,144	$ 609,943	212,031	$ 685,759
Sulphite, bleached	249,406	1,072,091	273,766	1,201,330
Sulphite, unbleached	222,399	631,910	313,847	811,262
Mechanical	572,173	1,140,071	597,848	994,917
Total	1,240,122	$3,454,015	1,397,492	$3,693,268

Table II

PAPER

	1922		1923	
	Cwts	Value	Cwts	Value
Newsprint	11,819,831	$52,802,255	16,173,554	$57,697,920
Book paper	16,164	190,800	34,541	240,039
Other paper and manufacturers	....	3,480,745	......	5,055,826
	....	$56,473,800	....	$62,993,785

WOOD PULP

	Cwts	Value	Cwts	Value
Sulphate	1,860,501	$ 6,313,861	2,465,552	$ 7,649,623
Sulphite, bleached	1,483,347	6,648,370	2,587,292	10,445,194
Sulphite, unbleached	2,358,811	7,813,218	3,757,713	9,234,020
Mechanical	4,681,766	9,487,506	5,665,935	8,296,343
	10,389,425	$30,262,955	14,476,492	$35,625,180

ACHIEVEMENTS OF A. P. & P. A.

Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association today opened a tour of the paper making districts of the south and west by an address before the Virginia manufacturers at the Jefferson Hotel. He devoted his talk to a review of the work of the American Paper and Pulp Association during the year just closed. In addition he gave the paper makers of the south some of the types of direct service rendered the industry by the Association, making in all a most effect presentation of the activities of this organization, the central body of the paper industry of the United States.

Calling the Association's major achievements of the year its "Forward Steps," he listed them as follows:

Closed successful campaign for a protective paper tariff.

Assisted pulp manufacturers in reorganization for more effective service.

Organized monthly service on general market conditions for paper manufacturers.

Distributed detailed and indicative coal statistics during critical period of the coal strike.

After two years effort finally arranged for a Paper Industries Exposition for April, 1923.

Organized campaign to bring out larger supplies of waste paper to meet the emergency shortage.

Cooperated with merchants and publishers in effort to secure reduction of second class postal rates.

Cooperated with the coated paper manufacturers in reducing the duty and increasing the supply of casein.

Secured more accurate knowledge of foreign pulp and paper conditions by personal study in northern Europe.

Two large general meetings held in New York and Chicago, with luncheon meetings in different paper making sections.

Through the Woodlands Section furnished detailed information on woods' operation problems and reported regularly on pulpwood conditions.

Assisted such of the smaller associations as Gummed, Glazed and Fancy, and Cardboard by bringing them together under one secretary.

Perfected a closer coordination of the activities of the several associations of the industry to improve direct service to manufacturers.

Established contact with the banking interests of the country to facilitate their use of accurate information as to the paper industry.

Brought about closer contact with Washington through more effective cooperation with the Department of Commerce, Bureau of Standards, Treasury Department and other Government Bureaus.

The direct and continuous service of the association to its membership was partially listed as follows:

Kept members informed as to legal decisions affecting trade association activities.

Reported repeatedly to members upon the industrial, railroad, labor and transport situations.

Followed and opposed harmful legislation proposed both at Washington and in states where paper mill centers are located.

Represented the industry in activities of the National Industrial Conference Board, the United States Chamber of Commerce, and in contacts with the National Foreign Trade Council, and other national associations.

As an educational activity cooperated closely with governmental and other agencies working for comprehensive forest policies, and right legislation by the federal government and the states to secure continuous forest production.

Cooperated with the Customs Officials of the Port of New York in preventing entrance of paper wrongly classified and valued. Made strenuous efforts to prevent dumping of paper from foreign countries.

Kept members in New York City and in the several states informed as to local matters and meetings of interest. Members were asked to represent the Association in numerous conventions and gatherings where matters of interest to the paper industry were being discussed.

Dr. Baker then discussed Scandinavian conditions, comparing the situation there with the conditions in America, and pointed out the need for American development of export trade if this country is to have its proper place in the paper industry of the world.

THE BROMPTON FAMILY WELL OFF

In its first consolidated statement, showing the operations and assets of the Groveton Paper Company and the Claremont Paper Company, Brompton Pulp & Paper Company, Limited, makes a showing which justifies the favorable anticipation that has for some time existed in the Street, showing, as it does, over five per cent. earned on the common stock of the company after a liberal charge for depreciation, bond interest, payment of the Claremont Paper preferred dividend, and allowing for the dividend on Brompton preferred for the year. The exhibit is further remarkable for a striking improvement in working capital position. The report under review covers operations of the Brompton Pulp & Paper company for 14 months, and the Claremont and Groveton companies for twelve months ended December 31st, 1922. The statements of the two latter companies have never been published, but the comparative figures or the balance sheet, particularly, reveal what their inclusion in the consolidated statement means to Brompton.

Earnings after deducting administration expense, selling expense and income tax, amounted to $1,607,212, as compared with $1,097,784. The sum of $366,589 was written off for depreciation, as compared with $244,000 leaving a balance of $1,240,621. Bond interest required $362,783, as compared with $200,744, this increase reflecting the inclusion of the Claremont and Groveton bonds. The preferred dividend on the 2,500 preferred shares of the Claremont company required $17,500, leaving a balance of $860,338. No dividends were paid during the year on Brompton preferred. Payment of dividends would require $160,000, which would leave a balance of $700.338 available for distribution on the common shares, or the equivalent of slightly over 5 per cent. on the 140,000 shares issued The undivided surplus of $860,338, with the balance of $811,625 from the previous year, leaves at credit of profit and loss a balance of $1,671,963.

The grinding of pulp has been seriously handicapped in Northern New York this winter by unprecedented low water. It has become necessary for the St. Regis Paper Company to protect itself by an arrangement with the Northern New York Utilities Inc., under which steam power was leased from the New York Air Brake Company plant in Watertown.

THE FRENCH TRADE TREATY AND CANADIAN PULP AND PAPER

Canadian pulp and paper are included in the list of commodities which will benefit, theoretically, by the new trade treaty with France, now awaiting ratification, in that they will be entitled to the minimum tariff, although those in the industry do not look for any large increase in the volume of these exports as a consequence thereof. In the past, Canada's exports of this character to France have been confined principally to woodpulp, our exports of paper being small and relatively unimportant.

Before the war France produced sufficient paper for her own needs and exported a considerable quantity. For her supply of raw materials, however, she depended largely on imports and the annual importation of wood pulp amounted to some 250,000 tons of mechanical and about 200,000 tons of chemical pulp. During the war France suffered like most other countries from a shortage of paper and paper-making materials and her production of paper declined to less than 50 per cent of normal. The close of the war saw the paper industry badly disorganised and it has not yet fully recovered. At the present time most of the woodpulp used in France is imported from Scandinavia as is also a considerable amount of newsprint. Swedish trade returns show exports to France in 1921 of 24,000 tons sulphite and 11,250 tons mechanical pulp, in addition to about 4,000 tons of newsprint. For the first ten months of 1922 Sweden shipped to France 78,600 tons of sulphite, 15,000 tons of ground-wood and 7,500 tons of sulphate. The Scandinavian countries also supplied 42,000 tons of newsprint during that period. France imported newsprint during 1922 at the rate of about 9,000 tons monthly as compared with domestic consumption of about 13,000 tons monthly.

Canada's exports of paper to France have been small and were largely due to the inability of the European mills to make deliveries in 1918-1919. The following are the most important items in our exports.

Wrapping Paper,	1918	336,100 lbs.	$28,573
	1919	457,700 lbs.	30,977
	1920	154,700 lbs.	10,882
	1921	1,087,900 lbs.	110,197

Felt and Roof Paper,	1918	$39,885
Total Paper	1918	68,458
	1919	138,614
	1920	21,134
	1921	117,488

In 1922 there were no exports of paper to France with the exception of one item, Paper board, valued at $383.00

With regard to wood-pulp, however, the situation is different, as exports of both mechanical and sulphite pulp have been considerable since 1914 although they show wide fluctuations.

The following table shows the quantities of wood-pulp exported to France during the past nine years:

	Mechanical		Chemical	
	Tons	Value	Tons	Value
1914	7,569	$96,050	43	$1,425
1915	18,335	272,700	..	..
1916	31,821	473,190	..	..
1917	1,668	33,900	..	..
1918	..	..	..	..
1919	39,989	808,257	2,558	196,502
1920	25,803	1,241,811	6,916	806,317
1921	12,255	556,004	1,455	95,489
1922	30,021	806,949	15,374	709,948

If the new trade treaty is ratified, Canada will obtain the minimum tariff on wood-pulp which will be as follows:

Mechanical dry, per 100 kilos—Fr. 1.00
Mechanical wet, per 100 kilos—Fr. 0.50
Chemical Pulp per 100 kilos — Fr. 2.00

(1 fr. per 100 kilos at present exchange equals about $0.64 per 2,000 lbs.)

The main divisions for paper in the French tariff are the following:

Paper weighing more than 30 grammes per sq. metre: Fr. 10.00 per 100 kilos;

Paper weighing more than 30 grammes or less per sq. metre: Fr. 15.00 per 100 kilos.

(30 grs. per sq. metre is equivalent to 18.5 lbs. per 500 s. 24 x 36 ins.)

So-called "fancy papers" are subject to duties from Fr. 15.00 to Fr. 60.00 per 100 kilos.

According to this schedule, newsprint, wrapping, book papers, etc., over 18.5 lbs. basis would be subject to a duty of 10 francs per 220.4 lbs. and all lighter weights to a duty of 15 francs per 220.4 lbs.

(10 francs per 220.4 lbs. is equivalent at present exchange to approximately $6.35 per 2,000 lbs.)

CLYDE AND SISSIBOO BONDS GUARANTEED BY BECKER & CO., LTD.

Messrs Aemilius Jarvis and Co., Ltd., are offering a new issue of $500,000 Clyde and Sissiboo Pulp Co., Limited., 6½ per cent. first mortgage 20 year sinking fund gold bonds. These bonds are unconditionally guaranteed both as to payment of principal, interest and sinking fund by Messrs. Becker and Co., Ltd., of London, England, whose business is the largest of its kind in the world, being merchants, manufacturers and importers of wood pulp and other raw material used in the manufacture of paper.

The guarantor holds controlling interests in subsidiary companies operating in France, Italy, Norway, Sweden and United States with agencies in the Argentine, Brazil, Mexico, China and Japan. An attractive feature of the Clyde and Sissiboo Pulp Company's business is the fact that the entire output of their mills for a period of twenty years has been contracted for by Messrs. Becker and Co., Ltd., the output to be sold at prevailing market prices over that period.

The profits of the Clyde and Sissiboo mills for the year 1921 were $150,000, or an amount equal to more than four and one-half times bond interest requirements, and in addition the guarantee of these bonds ranks prior to the dividends on the capital stock of Becker and Co., Ltd., of London, on which 15 per cent. per annum has been paid for the past six years.

It is understood that more than two-thirds of the issue has been sold privately, and that the public offering of the balance will be made in the near future.

APPRECIATE THE CORRESPONDENCE COURSES

The following extract is an example of the comments that are made by the students in the Institute of Industrial and Domestic Arts with regard to their opinion of the correspondence courses in Pulp and Paper Making.

"Truly, I find the work to date very practical and worth while. I believe every man in the business has some time for some part of the work. There is knowledge for all."

(For particulars, address The Institute of Industrial and Domestic Arts, Gardenvale, Que.)

PULP AND PAPER NEWS

Lieut. Col. Thomas Gibson, Vice President of the Spanish River Pulp and Paper Mills, Limited, and Mrs. Gibson, were the hosts at the United Service Club ball held in the King Edward Hotel, Toronto, last week, the guests being received by Col. and Mrs. Gibson at the entrance to the ball room on behalf of the organization.

Pulp area deals just put through by the Ontario Government include the following: west half of Sterling township, one quarter square mile in area, secured by the Russel Timber Company, price, 12.03 per one thousand feet for spruce timber, \$3.51½ per cord for spruce pulpwood and 76½ cents per cord for fuel wood; a concession on the Lake Superior Division of the C. N. R. which, which was awarded to J. E. Cook, of Fort William, who bid \$2.15 a cord for spruce pulpwood and \$1.40 per cord for other pulpwood: a one-quarter square mile tract in Cane township to Donald Duff of Cane , P. O., his bid being \$4.25 per thousand feet for pine timber, spruce and poplar \$3, other timber \$2.50, ties 30 cents each, spruce pulpwood 90 cents per cord, other pulpwood 50 cents per cord, fuel wood, 35 cents per cord.

A new line is being placed on the Canadian market by the Victoria Paper and Twine Company, Toronto. It is in the nature of a specialty known as the "Wayne Cedo Chest" and is a running mate of the Wayne Wardrobe. The chest, which is made of rope paper and lined with corrugated board, will be distributed from both the Toronto and Montreal warehouses of the company.

James Sterling, of the Sterling Twine Company, Wilkerton, Ont., was a business visitor to Toronto last week.

Several Toronto paper men have been elected Vice-Presidents of the Garrison District Business Men's Association, an organization formed to promote the welfare of one of Toronto's chief historical districts, both from a social and business standpoint. These include Charles V. Syrett, of the Victoria Paper and Twine Company, Limited; E. B. Collett, President Collett & Sproule, Limited, paper box manufacturers, and E. J. Hathaway, of Warwick Bros. & Rutter, Limited, manufacturing stationers. The firms of the district will hold a luncheon at the Prince George Hotel on March 1st.

Howard-Bennett, Limited, has been granted an Ontario charter with authority to take over the business formerly run by Frank Arnold Howard at Port Arthur. The company is authorized to engage in business as papermakers, box makers, etc., and to operate as publishers, lithographers, etc.

The Georgetown mill of the Provincial Paper Mills Company, Limited, was shut down for a few days last week owing to a break in the drive shaft of the engine. The Georgetown Coated Paper Mills were also closed down for a brief spell while the boilers were renewed.

The annual meeting of the Interlake Tissue Mills, Limited, was held at the head office of the company on University Avenue, Toronto, on Feb. 21 when a successful year's operations was reported. The following officials and directors were elected: President and General Manager, George Carruthers; Vice-President and Treasurer, I. H. Weldon; Secretary, S. F. Duncan; directors, Charles Dewing, Alexander Faskin, S. B. Munroe, A. B. Connable. The Board of Directors and executive staff are the same personnel as last year.

C. H. Cummings, of the Chemical Paper Company, Holyoke, was a caller on the paper trade in Toronto last week.

Charles F. Maunsell and C. E. French, of the Toronto office of the Howard Smith Paper Mills, are back at their desks again after a siege of la grippe.

All doubt as to what disposition would be made of the business of the Buntin, Reid Company, paper dealers, Toronto, was set at rest last week when it was announced that new interests had purchased the business from the executors of the estate of the late Alexander Buntin. The company has passed under the control of T. J. Macabe, formerly assistant-treasurer of the C. N. R., who is the president of the new organization: John Martin, head of the John Martin Paper Company, Winnipeg, who is Vice-President and George H. Allen, also of the John Martin Paper Company, who is named as director and sales manager. The only retirement from the old company is W. H. Lytle, who was the efficient accountant of the Buntin, Reid Company for about twenty-five years and who enjoys a wide popularity in the Ontario paper trade. The old name of the Buntin, Reid Company will be continued. In conversation with the Pulp and Paper Magazine of Canada, Mr. Allen stated that the new organization would cater exclusively to printers and that a mail order department would be established to take care of the printing trade at outside points.

Directors were re-elected without change at the annual meeting of the Provincial Paper Mills, Limited at the head office of the company on University Avenue, Toronto, on Feb. 21 and the following were named as officers: I. H. Weldon, President; T. A. Weldon, Vice-President; S. F. Duncan, Treasurer, and W. S. Barber, Secretary. Formerly the office of Secretary-Treasurer was combined and held by Mr. Duncan. Mr. Barber is, therefore, a new member of the executive. The regular quarterly dividends of one and three quarters per cent on preferred and one and one half per cent on common were declared, each payable April 2, to shareholders of record March 15 and the annual report of the President, as referred to in these columns last week, was submitted and approved. The directors expressed satisfaction at the success that had attended the year's operations of the company.

W. H. Sherriff, of the Hodge-Sherriff Paper Company, Toronto, selling agents for the Wayagamack Pulp and Paper Company, Limited, has arrived back in Toronto after a trip to the British Isles where he spent some time studying conditions in the paper field. His opinion, as expressed to a representative of the Pulp and Paper Magazine, is that the British market for paper is one that the Canadian paper manufacturer should keep his eye on, especially so as there is an increasing tendency in England to give the Canadian product preference over all other countries. Mr.

Sherriff said that there was the very best feeling towards Canada in the minds of leaders in the paper trade in the Old Land and that the foundation had already been laid for future business relations between the Canadian paper manufacturer and the British consumer. He added that conditions there were improving and that while they are never optimistic to a demonstrative extent over there the paper trade was far from pessimistic and there was a feeling that the industry there was in for a season of expansion. Speaking of conditions in Europe generally Mr. Sherriff said that the position of Canada, from a business standpoint, was good, in comparison. In his own line, that of kraft paper, he found the demand increasing in Great Britain to a gratifying extent.

Mr. Schofield, of the Schofield Paper Company, St. John, N. B., was a caller on the paper trade in Toronto last week.

George Davidson, of the Toronto office of the Howard Smith Paper Company, is down to give an address on the subject of paper to the Salesmanship class of the Toronto Typothetae at the King Edward Hotel next week.

J. L. Ebbels, of the American Writing Paper Company, New York, called on the Toronto paper trade last week.

After the problem of power for the Great Lakes Pulp and Paper Company had been wrestled with in Toronto all week, the Hydro Power Commission on Friday last approved the agreement submitted by members of the Gregory Commission for the solution of the Nipigon development troubles, provided the Government can find a solution for the legal and engineering objections raised. The agreement provides for the sale of 22,000 volt power at $18 per horsepower to the Great Lakes Pulp and Paper Company delivered at the plant near Fort William. The Drury Government has already approved the agreement and promised to confirm it by Order-in-Council and the agreement practically means that the matter of location for the industry is settled. The plant will be located on the Mission site, west of Fort William. The alternative agreement, submitted by Port Arthur, provided for the supplying of 110,000 volt power at $18 delivered at any point 1,000 feet distant from the existing transmission lines.

The St. Lawrence Paper Mills, Limited, Three Rivers, are now turning out newsprint.

Mr. Geo. M. McKee, ex-president of the Canadian Pulp and Paper Association, was in Montreal last week, making arrangements for the removal of his household effects to Ogdensburg. He states that the new mill at Ogdensburg is making rapid progress, and it is hoped to turn out newsprint in June.

Four teams representing pulp and paper companies were competitors in the Eastern International Dog Race held at Quebec on February 22, 23 and 24. The Brown Corporation had two teams, Price Bros. one and the St. Regis Pulp and Paper Company one. Jean Lebel, with a team belonging to the Brown Corporation, won on each of the three days, thus securing the prize of $1,000 and the silver cup that stands for the championship of Eastern Canada and the Eastern States. An additional $1,000 was split among the next three teams. The times of the winners over the three days' racing with a total distance of 131 miles were Lebel, Brown Corporation, 15 h. 50 m. Skeene, Brown Corporation, 17 h. 25¼ m. Letourneau, Letourneau & Belanger, 17 h. 32¼ m. and Dupuis, Price Brothers, 17 h. 50¼ m. The race created great interest and was witnessed by thousands of people. Lebel had previously won the northern New Hampshire Dog Sled Race.

Mr. H. Grindstadt, Superintendent of the Brompton Company's sulphate mill, is slowly recovering from a long illness.

SULPHUR DYES PREPARED FROM XYLAN

By E. R. DARLING

Xylan, or wood gum, is a product that can be obtained from wood and other ligno materials in small quantities. In the corncob it occurs in such quantities as to make it profitable to extract it for commercial purposes. The amount of raw material, especially in the maize producing States, is enormous, and no scarcity would result for a long time. The red cob seems to furnish a more satisfactory product than the yellow cob. This may be due to the colouring matter present in the cob which is carried with it through the process.

The coarsely ground corncobs are first well covered with a 3 per cent. solution of caustic soda and heated under ten pounds pressure for one hour in an autoclave. The resulting mass is then filtered and the residue given a slight wash. The resulting liquors are all united, giving a dark brown solution. To this is added dilute sulphuric acid until there is present an excess amount to about 2 per cent. By this treatment a brown insoluble product is obtained which is filtered off. This is then taken and added to a hot 5 per cent. solution of sulphuric acid, which converts it into a dark brown brittle mass. This product is well washed with water and dried, upon which it is reduced to a fine powder by grinding. The yield from the cob by this treatment is high and the expense involved is low.

So far only two dyes have been prepared—one a black and the other a blue. These have been given the usual tests and compare very favourably with similar colours to be found on the market.

The black dye was the first to be prepared. Two hundred grams of the powdered xylan was taken and to this was added 825 grams of sodium sulphide and 270 grams of sulpher. To the whole was added sufficient water to give a solution, which was slowly heated until the contents of the container was a paste. This was then placed in an oven and the heating continued until a temperature of 190 deg. C. was obtained. The heating was continued at this temperature for six hours. At the end of this time the mass was thrown into water, and made into a solution, after which dilute sulphuric acid was added to precipitate the dye. When the precipitation was complete the whole was filtered and washed free from acid. The dye was then allowed to dry.

In the preparation of the blue dye the base was first treated with nitric acid. This was carried out by adding the powdered xylan to 50 per cent. solution of nitric acid. In a few minutes action started, which resulted in the evolution of dense fumes of the oxides of nitrogen. When this had ceased the xylan had changed from a dark brown to a light yellow. The whole was then filtered, washed, and at once used as in the preparation of the black dye.

The black dye is obtained in the form of a dark grey to black powder. In order to improve the shade and cut down the amount of dye required to produce deep shade it was found of advantage to add to the mixture before fusion certain nitro compounds. Amounts of these materials used averaged from 10 to 20 per cent. of the amount of the xylan taken.—*American Dyestuff Reporter.*

UNITED STATES NOTES

A stand of yellow pine timber, covering an area of 1,276,264 acres, is threatened with destruction by a bark beetle, according to the United States Forest Service. This area is located in southern Oregon and northern California, and the losses from 1910 to 1919 have aggregated 1,200,000,000 board feet, causing an annual destruction of $360,000 worth of timber, according to experts in the Bureau of Entomology. The insects have been largely cleaned out of 200,000 acres, and the survey shows that an area of about 722,000 still needs control measures applied. Various private interests own 158,532 acres in the infected area, the Klamath Forest Protective Association owns 446,937 acres, and the Federal Government holds 656,460 acres. The Klamath Association and the Government are cooperating in the managing of the work in the designated tracts. The rest is being supported by State collections through tax liens, according to the report.

One of the most striking examples of trade expansion of the many that has developed since the rate war between the various coast to coast steamship lines was declared last spring, and which has made possible a tremendous growth of business between the two coasts, is in the paper business worked up between New England and Western States. New England paper mills producing wrapping paper, writing paper and similar goods, have built up a very satisfactory trade from Boston to the Western States, and in some cases with such States as Idaho, Nevada, etc. Goods for these districts are transhipped at San Francisco by rail to destination. This growth has been due entirely to the low rates quoted by steamship lines, as prior to the rate war, the paper mills in the Middle West supplied the consumers on the Pacific Coast. The rate from Boston to any Pacific port in the United States by water for paper of this class is approximately 50 cents per 100 lbs. The all rail rate from Boston to the Pacific Coast is about $3 per 100 pounds, in less than carloads.

No few manufacturing concerns in the Middle West are hit by this competition from the East due to low rates to the Pacific Coast via the Panama Canal. According to a statement issued last week by R. M. Calkins, vice-president of the Chicago, Milwaukee and St. Paul Railway, many firms may be forced to move to the Atlantic Coast or quit business entirely. To explain the seriousness of the situation, Mr. Calkins cited one case where a Wisconsin Company shipped ten carloads of its product to the Pacific Coast by way of Philadelphia and saved $2,500 under the railway rates from Chicago to the Pacific slope. "For quick action and relief the transcontinental roads will on March 7 reduce the rates on tin plates from the Chicago district to the West Coast from $1.20 per 100 lbs. to 75 cents and will make corresponding reductions on all other commodities, ultimately involving the entire fabric," his statement declared Mr. Calkins said the proposed reductions would apply not only to the entire Pacific Coast, but to the intermediate territory between Chicago and the Coast.

United States Senator Pat Harrison of Mississippi, writing in last Sunday's New York Times, on "The Urgent Need of National Reforestation" cited figures showing that fully 5,000,000 acres of forests in the United States are being stripped annually, and that 10,000,000 acres are being burned annually. "It is estimated," wrote Senator Harrison, "that there are 460,000,000 acres of forest lands in the United States, and that already 70 per cent. has been logged of its virgin timber; that 24 per cent. contains today only a partial growth of culled timber of useful sizes; that 29 per cent. has been stripped clean of merchantable products, and that 17 per cent. of the forest area, or an aggregate of 81,000,000 acres, has been stripped clean of its merchantable timber, burned over, and is lying practically idle and known as unproductive land. With a situation such as these figures reveal confronting the American people, it is little less than a crime for the Government to delay longer in solving the problems and adopting at the earliest possible date a fixed policy that will insure to the American people in the future an adequate supply of timber to meet the growing needs of our industries and home-builders.

A new line of water marked bond paper to be marketed under the name of "Stillwater Bond" is being brought out by the Peerless Paper Company of Dayton, Ohio. It is made and carried in stock in white and in seven colors.

Col. Theo. S. Woolsey, Jr., of the Yale School Faculty, and Prof. Harry C. Belyea, of the New York State College of Forestry, Syracuse University, have completed an interesting study of the problems involved in cutting wood on private lands in the Northeast. The investigation has brought out clearly some of the conflicts between the public interest and private business. Touching the matter of pulp mill supply, the investigators concluded that some kind of a sustained yield policy, considering all interests involved, is evidently essential. "Pulp mills with a fixed capacity," their report states, "must have an annual supply of timber or there is unemployment. Pulp mills with a fixed capacity must keep their factories going above a certain minimum, if they are going to pay interest on their investments. While the public may demand a sustained yield, the interest of the private owner may demand working the timber as rapidly as possible. The best solution would be such a compromise that the demand for constant timber production would be met with suitable provision for the interest of the private owner. Some one has suggested that pulp mills and lumber concerns should be grouped with a deliberate scrapping of the mills that could not be supplied. The owners of the mills scrapped would obviously demand compensation. The other alternative is to admit frankly that economic pressure must solve the problem; to allow the weaker mills with an insufficient timber supply to go under with forced abandonment and liquidation."

In order to call attention to its line of super calendered news of foreign make, the Paper House of Pennsylvania has issued a little flyer in the form of a miniature newspaper with typical display head lines, boxes and illustrations, the latter showing the possibility of this news in the printing of a 133 screen halftone.

The Markets.

CANADIAN TRADE CONDITIONS

Montreal, February 27. — According to reports by jobbers, business is fairly good. It has shown a little more life than last week, and the outlook is said to be satisfactory. General trade conditions warrant the belief that there will be a more sustained revival during the remainder of the year. There has been some talk of a rise in the prices of several lines, owing to the advancing tendency of many raw materials; the objection is that higher values may result in a curtailment of consumption, thus possibly checking the undoubted improvement in the paper industry.

The reports of the Provincial Paper Mills, Fraser Companies, Howard Smith Paper Mills, and the Brompton Pulp and Paper Company all indicate that the pulp and paper trade is gradually recovering. In some respects the reports are better than was excepted; they bear evidence of conservative management and of that cautious policy which found expression at the annual meeting of the Canadian Pulp and Paper Association. The reports also reflect the promise of very good results from this year's operations.

It is gratifying to note that Canadian Mills are making a stronger bid for export trade on book, bonds, writings and other paper. In this connection, Mr. C. Howard Smith in the annual report of the Howard Smith Paper Mills, Limited, states:

"Your directors are pleased to report a marked improvement in the export business, repeat orders are continually being received, and the product and handling of same favorably commented upon." Australia is a very good customer; out of 4162 cwt. of book papers exported in January our sister Dominion took 2870 cwt.; and out of 739 cwt. of bonds and writings, Australia bought 288 cwt. The total exports show a very substantial increase over those of January 1922.

The call for newsprint continues very good. The extent of the demand by the United States is shown by the figures of the imports for the ten months ending October 1922, the figures of which are just to hand. In that period 832,657 tons were imported compared with 637,797 in the corresponding period in 1921. Of those totals Canada sent 733,143 in 1922 as against 529,992 in 1921, while the European contribution dropped from 107,805 in 1921 to 99,514 in 1922. Canadian imports therefore increased 203,151 or about 40 per cent. while European imports were slightly lower.

Some of the mills making the finer grades of paper are affected by the low water conditions.

There is a moderate demand for bonds, writings, book and other papers. Wrappings continue to be well bought, and toilets and tissues meet with a ready sale. The mills, as a rule, are running at a rate which is considered to be satisfactory. Boards are keeping up, while the outlook for roofing felts is excellent. Rags are still scarce and very firm, and waste paper commands good prices.

In the pulp market there is a very good demand for bleached sulphite, the orders coming in at a greater rate than at any period this year. A very large amount of groundwood is moving although the price is inclined to soften. The strike in Sweden continues, and this has had the effect of strengthening the quotations of chemical pulp.

The quotations of pulpwood are moving upward, and it looks as if there will be a much firmer market in the near future.

Ontario Market News

Manufacturers and distributors of paper interviewed in Toronto and district unite in declaring that the pulp and paper trade of the province is in a healthy condition with an exceedingly bright outlook for the future. Some of the jobbers were inclined to complain of a slight falling off in orders in some lines during February but it was generally admitted that what lessening of business volume there was was due to extremely bad weather conditions and the epidemic of la grippe which laid up hundreds of paper men all over the province and among them a large percentage of the buyers. This condition undoubtedly had a bad effect on business, but it is generally believed that next month will see the paper trade back on a level with January, which was a good month. In the meantime there has been no slackening off in manufacturing operations and production and demand for practically all lines have been well sustained. There is an upward tendency in most lines of paper, the United States mills already having set the pace in several lines, such as bonds, ledgers and books, although not to sufficient extent to affect the Ontario market as yet although it is predicted that higher prices may be looked for shortly. Envelope manufacturers and manufacturing stationers are all busy and wrapping paper, tissue, toilet, book and other paper mills report no diminution in orders.

PULP — There is no material change in the pulp situation except that groundwood, which had been enjoying a firm market of late, is showing a somewhat weaker tendency. Most of the mills are out trying to sell and it is stated that groundwood is now being offered at $36.00 in place of the $47 and $48 prices that have been prevailing of late. A good many buyers are looking for a pretty free flow of groundwood pulp when the water starts again at which time they argue there will be considerable quantities of the product in the market at very reasonable prices and there is a disinclination to buy at the present time. Bleached sulphite is quoted at $85 to $90; unbleached at $55 to $70; news grade at $55 and sulphate at $68, the market being fairly firm in all these lines.

TISSUES AND TOILETS — Toilet paper prices have remained stationary, giving a satisfactory margin of profit to the wholesale paper merchant. Some imported tissues have been offered on the Canadian market, most of which are inferior in quality as compared with the article of home manufacture, and some of them are of bogus sizes and short counts, all of which results in the absence of value when these points are considered. Business in folded towels has been quite active and prices are stated never to have been so low as they are at present. There has been considerable cutting in toilet papers and so prevalent has the practice become that manufacturers have been endeavoring to get the co-operation of the wholesalers in the maintenance of the established prices. The manufacturers are pointing out that many of the jobbers are not securing the full margin of profit allowed by the establishment of resale prices and there is a disposition on the part of some to discontinue the established resale price and replace it by a flat price to jobbers. Generally speaking both the toilet and tissue branches are fairly active and mills for the most part are disposing of their product steadily.

TWINE — The twine market is rather dull. An Ontario manufacturer told the Pulp and Paper Magazine that the future of the market would depend largely upon the burlap business in the United States. It was stated that if the United States went heavily into the buying of burlap the probability was that there would be a rise in twines. Dundee jute manufacturers had effected cuts in wages and this too would have an effect on the market. Dealers consider cotton twine somewhat hazardous to buy and there is a probability of Russian hemp coming back into the market in the near future.

NEW YORK MARKETS

New York, February 24.—(Special Correspondence) — A steady demand of very healthy character is reported for paper of nearly all kinds, and the market this week has continued active. It is really quite encouraging to talk to paper jobbers in New York about the market situation. The statements generally made about the market indicate that there is a large movement of supplies into consuming channels, that printers and publishers and other large users of paper are buying with much freedom against actual requirements, and that the situation as a whole is possessed of numerous characteristics which breed optimism and make for pronounced confidence regarding the future.

These conditions in the distributing and consuming branches of the trade are reflected by activity at manufacturing centres. Paper mills in the United States are working at very close to capacity; some, of course, are running at full output, and demand for their product is developing at a rate where most manufacturers are finding it necessary to gradually increase production. Moreover, prices are in a fairly favorable position. Competition for business is keen, as it invariably is, and in frequent instances producers and jobbers are obliged to do business on a small margin of profit, but taken as a whole there is little fault found with the prevailing level of prices. Manufacturers are exerting every effort to keep paper prices stabilized in spite of the advancing tendency of many kinds of raw material, and in doing this they have adopted the broad policy of thinking of the maintenance of demand so as to keep their plants operating before considering the matter of profits.

There has been a stiffening of quotations on book papers. Most manufacturers are now quoting close to 7 cents per pound f.o.b. New York on machine finished book, and only in exceptional cases are orders being accepted at less than 6.75 cents. Super book is quoted at a differential of between 15 and 25 points of machine finished, or around a quarter of a cent per pound and slightly less. Coated book is firmly quoted at from 9 cents a pound New York upwards, depending on quality, some grades of coated running in price as high as 15 to 16 cents a pound.

Book paper mills are well provided with orders. Recent developments in the transportation situation have been the means of manufacturers in the Kalamazoo district securing a lot of business from the East, due to embargoes and delays in the eastern part of the country. A jobber stated yesterday that he was getting quicker deliveries from Michigan mills than from mills in New York State. This seems strange, but it is the fact, and the result has been that many dealers in this city have lately been doing most of their buying from western mills.

The firming position of book paper prices is due in large part to the advance in raw material. It will be remembered that the old paper market advanced sharply during the last few days of December and the early part of January and that prices have since been maintained on the high levels reached at that time. It invariably requires a few weeks for finished paper prices to reflect a rise in raw stock, and book paper is now showing the effects of the sharp jump in prices six or eight weeks ago of old magazines, which are largely used in the manufacture of book paper. Logically, should paper stock decline it would take a while for new paper to follow, and since waste paper prices, particularly flat stock, hold steady with no indication of a break, it is felt book paper prices are due to remain firm for several months at least.

Newsprint is almost in a class by itself in point of market activity. Manufacturers of print paper are enjoying a broad demand for their product and are producing at a heavy rate and finding a ready outlet for about all the paper made. Prices are firm, and it would appear that any change that may take place will most assuredly be in an upward direction. Publishers are consuming newsprint in a volume approaching record-breaking proportions and seem likely to continue so during the present year, thus insuring manufacturers a ready market for their output.

Tissues are in good demand and steady in price. Despite the strike of clothing workers in New York there has been no falling off of demand for white tissue, and coarse tissues are selling in large amounts. Moreover, producers of towels and napkins are gradually opening up new markets for themselves through the advertising of their products, the use of these paper articles becoming more and more general.

Box boards still display a comparatively soft price tone. Plain chip is quoted at $60 and slightly higher per ton f.o.b. New York, news board at $65 and binder board at $90, which prices represent no further change. Demand is very spasmodic, however, and some mills are in want of additional orders. The situation in boards should improve very soon since the pre-Easter season is almost here and since this is one of the two periods of the year when consumption of board is at its highest.

GROUND WOOD. — There has been a little steadier tone to prices of ground wood this week. No change of consequence has developed in quotations, which remain at last reported levels, but demand has improved in quotations, which remain at last reported levels, but demand has improved to at least some extent and prices accordingly show increased steadiness. Reports indicate that there is a good movement of mechanical pulp into consuming channels. Buyers are operating on a reserved scale, absorbing principally supplies actually and directly required, but heavy consumption is obviously creative of fairly large demand. Furthermore, producers are offering pulp in limited tonnage. Few have stocks of normal size on hand, and they are bent on conserving supplies for their own use, which is another sustaining market factor. Around

$43 per ton f.o.b. grinding plants is regarded as an average of quotations on domestic ground wood, with Canadian pulp reported available at from $40 upwards at shipping points, and ground wood imported from Europe at around $45 per ton ex dock at American seaports.

CHEMICAL PULP — Chemical pulp is reported moving in fairly large quantities. Contract buyers are taking commitments in a regular way and there is, everything considered, a moderately good transient demand. It is true that papermakers are buying cautiously; the mere fact that importers, and some domestic producers as well, have recently been granting price concessions on pulp causes buyers to resort to a great deal of shopping in the market before placing orders, but reports say that the movement into consuming channels is comparatively large for this time of the year. Prices are just about holding their own. Sellers' quotations are fully maintained, and nearly everyone on the selling side of the trade is bullishly inclined regarding the future though spot lots of pulp are frequently being sold at slightly less than the prices asked.

Nothing new has developed in the Swedish situation. The lockout of pulp mill operatives there continues, and members of the trade in New York are of the belief that it will not be terminated until manufacturers in Sweden see their timber stocks in a more favorable position. High prices are quoted by the Swedes on both sulphite and kraft pulp for future shipment, and it is argued here that the paucity in production in Scandinavia is bound to be felt in the American market in due time.

RAGS — While practically all grades of papermaking rags are in good demand and prices rule firm, the highest single grade of stock and the lowest class of rags have provided the features of the market this week. Demand for No. 1 new white shirt cuttings has been very active, and desire on the paper of fine paper mills for these rags has placed shirt cuttings in almost a booming position. Dealers in New York are reported quoting 14 cents per pound f.o.b. this city for No. 1 new white shirt cuttings and it is said that tonnage lots have been sold even in excess of this figure.

The other class of rags prominent in demand is roofing stock. Felt paper manufacturers are buying in good amounts, and prices of satinets have stiffened. Shippers ask 1.60 cents a pound at shipping points for No. 1 roofing and 1.50 cents for No 2 packing, and only in exceptional cases are sizeable lots being secured by mills at less than these figures. Old white rags are firm and inclining higher. Thirds and blues are in good demand and quotably steady. New cuttings of nearly all grades have followed the rise in white shirt cuttings and are quoted at advances. Dealers ask around 11.75 cents f.o.b. New York for unbleached muslins, 10 cents for bleached canton flannels, 8.25 cents for light silesias, 7.75 cents for blue overall cuttings, 5 cents for washables, and 7 cents for fancy shirt cuttings.

PAPER STOCK — Inclement weather throughout the East and over the northern part of the States, leading to a curtailment of collections of old paper, has created a firmer market, particularly for the low qualities of waste paper. No broad price changes have occurred but there has been a general stiffening in the news and mixed grades, while high qualities display greater firmness than before. Folded newspapers are selling at 1.50 to 1.55 cents per pound f.o.b. New

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York, and most dealers declare they are securing the higher figure; No. 1 mixed paper is bringing an average of 1.20 cents per pound, dump mixed paper around 90 cents a hundred pounds, and overissue newspapers, 1 70 cents a 1.70 cents a pound. Shavings are in steady call and prices range around 4.25 cents per pound New York for No. 1 had white, and 3.60 cents for No. 1 soft white shavings. Old magazines are firm at 2.70 cents per pound, mixed books at 2.25 cents, and old No. 1 Kraft paper at 2.40 cents.

OLD ROPE AND BAGGING. Old manila rope is in a strong market position. Paper mills are buying freely, and there appears to be every reason to believe dealers' assertions that supplies are light, owing to a low production. No. 1 manila rope of domestic origin has sold to mills at 7 cents per pound at shipping points though this is about the top of the market, some supply being available down to 6.75 cents. Foreign rope is quoted at a quarter to a half cent per pound under domestic. Old bagging is quotably steady but in rather limited demand. Gunny is moving comparatively well at about 1.50 cents per pound at shipping points for domestic material, and No. 1 scrap burlap bagging is quoted at 1.20 to 1.25 cents, and roofing bagging at 1.05 cents.

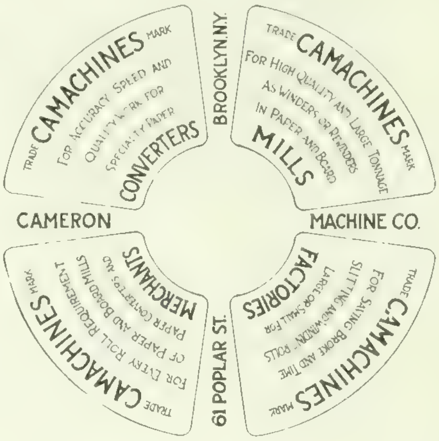
With the Woodsmen

NOTICE

The next issue of the "Pulp and Paper Magazine of Canada" will contain reports of, and papers read at the annual meeting of the "Woodlands Section."

THE COST OF THE WINDER BROKE

A report at the last meeting of the Technical Association of the Pulp & Paper Industry placed the loss in broke at there winders in a book paper mill as 6 per cent and the cost as $6.00 per ton. This, of course, includes shavings. The narrower the rewound roll, the more difficult is the process. It is obvious that any improvement in winders and winding that will reduce this loss is a distinct gain to the industry.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The Cameron Machine Co., are very much interested in this problem and have made valuable contributions to the science of roll winding. The Pulp and Paper Magazine is in receipt of a narrow roll, wound so tight and trimmed so smooth, that it could be printed on, as is shown by the accompanying figure, reproduced from it.

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WOOD PULP AGENTS

QUIG BROTHERS' SINGLE ACTING DUPLEX STOCK PUMP.

It is not generally realized that Quig Brothers' Foundry & Machine Works at Cornwall, Ont., are manufacturing a stock pump for the pulp and paper industry.

Their Single Acting Duplex Stock Pump is designed so as to give ready access to all valves, cylinders and working parts. The plungers are outside guided and outside packed. The pump is brass fitted throughout and provided with bronze ball valves on brass velvet seats. The brass valve seats are so arranged in the flanges between the valve boxes, which are bolted together, that thing may be removed without disconnecting any part of the chambers and parts of pump are free from pockets in which the stock may lodge. The entire pump is built in a careful and substantial manner.

They manufacture all sizes and capacity of Duplex, Triplex and Single Plunger Stuff Pumps.

NEW LINE OF SMALL VERTICAL POWER DRIVEN AIR COMPRESSORS

The Candian Ingersoll-Rand Company, 260 St. James St., Montreal, announces a new line of small vertical belt driven air compressors known as Type Fifteen. In addition to the plain belt drive design each size is built as a self-contained electric motor outfit, driven through pinion and internal gears or by employing the short belt drive arrangement. The compressing end and electric motor of both gear and short belt drive units are furnished mounted on a common sub-base, so that they are in no way dependent upon the foundation for correct alignment.

Several noteworthy features of construction have been incorporated, of which the "Constant-Level" Lubrication System is the most important. Others include the Constant Speed Unloader for plain belt drive machines; the Centrifugal Unloader for start and stop control machines; and the increased size of the water reservoir cooling pot.

The lubrication of small vertical compressors employing the enclosed crank case and splash system has often been a source of concern wherever oil in the air is a serious menace. The tendency of the old system has been to feed too much resulting in discharged air containing excess oil, or too little causing scored cylinders, excess loads and burned out bearings.

The "Constant-Level" system used in Type Fifteen Compressors automatically maintains a constant-level of oil, which insures the right amount being distributed to all parts.

As with the ordinary splash system, the base of the compressor forms an oil reservoir for the "Constant-Level" System. However, with this system, pet cocks determine the maximum and minimum amount of oil in the reservoir. Above this reservoir and directly underneath the connecting rod is a constant-level pan. Oil is pumped from the reservoir into this constant-level pan through a unique oil pump. Regardless of the amount of oil in the reservoir, so long as it is somewhere between the high and low level pet cocks, this system will function perfectly, insuring a constant-level of oil in the pan. A projecting stem on the connecting rod dips into this pan and distributes just a sufficient quantity of oil for proper lubrication.

The Constant Speed Unloader controls the unloading of the compressor by automatically opening the inlet valve when the receiver pressure rises above that at which the unloader is set to operate. When the receiver pressure has fallen a pre-determined amount, the unloader automatically releases the inlet valve and allows the compressor to return to work and thus build up the receiver pressure again.

The Centrifugal Unloader allows the compressor to start under "no load" such as is essential when automatic start and stop control is used, and permits the electric driving motor to come up to full speed before the load is thrown on automatically. This unloader accomplishes its purpose by holding the inlet valve open until the motor has reached full speed.

The smallest size is built with either ribbed cylinder for air cooling, where the service is intermittent, or a water jacketed cylinder of the reservoir type for constant service. All other sizes are only built with the water jacket of the reservoir type. The size of these reservoir pots is very generous, and one filling will be found sufficient for long periods of operation.

A descriptive bulletin has been issued on these compressors which describes in detail all their features including others not mentioned above. Copies can be secured by writing the above address.

BRITISH BUY CANADIAN WALLPAPER

A special despatch to the "Montreal Gazette" says that Canada is reputed to be the biggest buyer at the British Industries Fair at the White City. During the first week Canadians outbid even the Americans. Canadian manufacturers, who are exhibiting at the fair for the first time, also report good business, particularly in two unrelated products, condensed milk and wallpaper.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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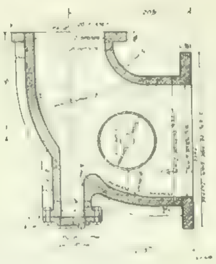

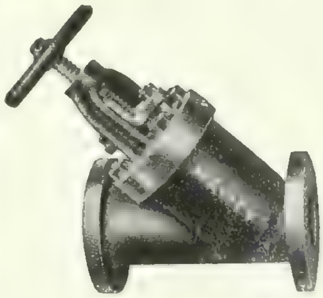

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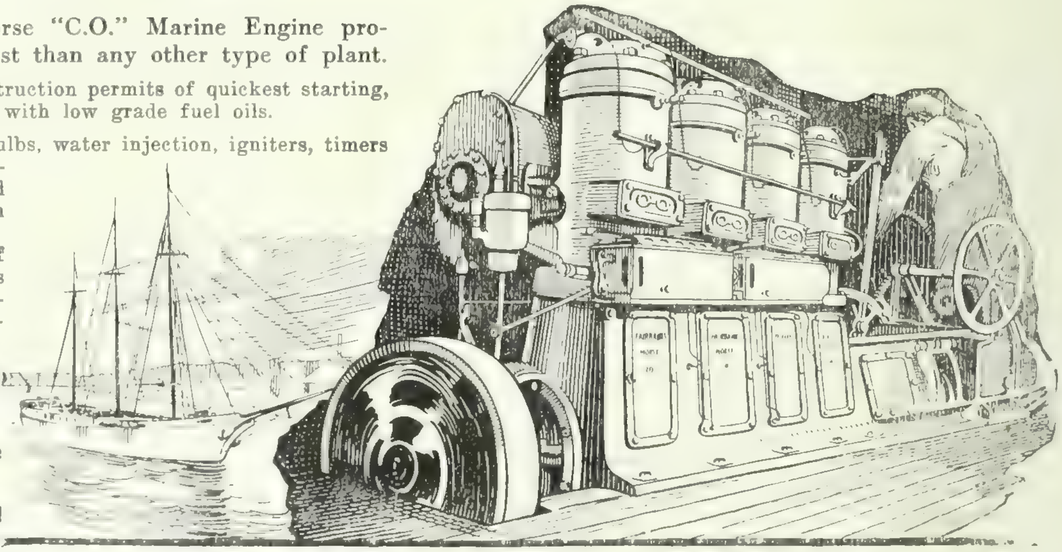

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EDITORIAL

A LONG SIGHTED POWER POLICY

When the province of Quebec built the great Gouin dam at La Loutre Rapids on the St. Maurice River, there were some people who thought the government had surely gone crazy. It is now beginning to be appreciated, however, what it means to the industries on the lower reaches of that river to have, on tap, the greatest body of artificially stored water in the world. During low water periods on the river, the deficiency in flow may be as much as 40 per cent drop from the maximum. This means that a concern with an installation of say 100,000 horse power, which was put in for the purpose of running a pulp and paper mill, or for distribution to textile mills or other industries was formerly likely to find itself operating only 60,000 horse power at low water and consequently shutting down a portion of the paper mill, the pulp mill or the other industries dependent upon that power. It meant throwing out of employment a great many people. As it is now, instead of getting an enormous flood and run off during the early spring, when the snows are rapidly melting, the excess water at the head of the river is being held back for future use, and is available when the river is low.

What the Gouin means to the power using industries on the St. Maurice was illustrated recently by a statement of the engineer in charge of the water delivery at the dam, when he said that, at that time, if the normal flow only were running down the river, there would be only 7,000 cubic feet per second flowing through the water wheels at Grand'Mere and Shawinigan Falls, but with the water available from the storage, it was possible to maintain the flow throughout the period of low water at a rate of 12,000 cubic feet per second.

The industries in the Lake St. John district have been similarly hampered in the summer months due to low water, and in the winter due to blockage by the ice, and have at times been obliged severely to reduce production. Reducing production, of course, means reducing employment and the Quebec government, looking on both sides of the situation, decided to provide water storage by the damming of the Kenogami and Sable rivers. We are not aware on just what terms the industries will be allowed the use of the water stored by virtue of the investment of public money in the new dam, but we have been assured by engineers that the cost of the Gouin dam on the St. Maurice will be paid for in twenty years, and even at the present rate of payment for water supplied from the storage. This return to the province of course does not take into consideration the enormous advantage of keeping the population at work and in producing a saleable product which means distribution of Canadian money in the Dominion.

The contract for the building of the new dam has been awarded to the Nova Scotia Construction Company, and the advantages will begin to be enjoyed during the Fall of 1924. The cost, as contracted for, amounting to $985,000 is less than had, in the first place, been expected. The government of Quebec is certainly to be congratulated on their bold and comprehensive method of making the resources of the province accrue to the benefit of the people residing in it.

MORE NEW MACHINES RUNNING

Public announcement was made last week that newsprint paper is now being produced on the news machines of the new St. Lawrence Paper Mills at Three Rivers. Last week, announcement was made on this page of the first paper running over the new machines of the Belgo Paper Company at Shawinigan Falls. On Tuesday we received a telegram from Port Arthur, announcing that the first paper on the new book machine of the Provincial Paper Mills was run off on Monday. It is expected also that the second machine of the Fort William Paper Company will be producing newsprint paper within a very short time. A little further West, the new groundwood mill of the Backus Brooks Company at Kenora has also started operation; this mill has a capacity of eighty tons. All of these developments indicate a persistent faith in the future of the pulp and paper industry in Canada. The Dominion is already the world's second largest producer, and bids fair to be in the lead shortly in certain branches of the industry, particularly in the manufacture of newsprint paper.

With proper attention to the management of the Canadian forest, so that there will be a perpetual and uninterrupted supply of pulpwood for these mills, there is no reason on earth why Canada should not for all time dominate the world's production of papers made from woodpulp. It is absolutely impossible, however, to look forward to such a happy condition of affairs unless immediate steps be taken to insure the forests of the future. We are confident in asserting that 90 per cent of the current destruction of the forests can be prevented, and that the principal obstacles to such prevention are the selfishness of certain individuals and concerns, and the general indifference of the Canadian public to the stake they have in this enormous natural resource.

PERSONAL CONTACT WITH AUSTRALASIA

In another column we print an interview with Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, outlining his impressions of a four months' visit to the Orient and the Antipodes, undertaken with the object of promoting the overseas trade of the Company. Canadian paper mills are making a strong bid for export business, particularly with Australia, and recent returns show that this is meeting with success. It is obvious that companies doing an export trade must have either direct representatives or agents, whose advice is particularly valuable in relation to general and local conditions. At the same time it is well that leaders of the paper industry like Mr. Howard Smith should visit the countries with which they are doing business. Those trips enable our manufacturers to get into closer touch with their representatives, to secure first hand information, to gather data as to prospects, and to appreciate the difficulties. Personal observation is worth reams of correspondence.

It will be observed that Mr. Smith is of the opinion that New Zealand and Australia offer opportunities for the expansion of trade in Canadian paper, although his statement as to Australia is qualified by the remark that tariff adjustments are essential. Great Britain has a firm hold on the Australian market, owing to the preference, which in turn naturally handicaps Canadian manufacturers. Canadian companies have made strenuous efforts, through the Canadian Pulp and Paper Association, to secure a like preference, and our Governments, Liberal and coalition, have been sympathetic in their attitudes. The negotiations between Canada and Australia for a preferential tariff have so far been barren of results, so far as is known, Mr. Robb having made no public announcement as to what progress was made during the recent visit to Australia.

The position taken up by the Canadian manufacturers is that Canada, as part of the British Empire, is entitled to the same treatment as the mother country; that Empire preference is the proper and logical method of dealing with this question, and that all parts of the Empire should be on an equality.

One objection made in Australia — Mr. Smith states —to extending the preference to Canada (in return for preference on our part) is that the Canadian pulp and paper industry is built up by American capital, and that a preference to our products is only an indirect method of granting a preference to the United States. This mis-statement has been fostered by certain representatives of British manufacturers, who do not desire any further competition from Canadian mills. It is true that a large amount of American capital is invested in Canadian pulp and paper companies; we have in fact, welcomed the building of mills here rather than sending our raw material to be converted into the finished article on the other side of the border. American capital is invested in the pulp and paper industry in the same manner as British, French and Belgian money is invested in this and other forms of Canadian industry and in developing our natural resources. Canada is a young country, with immense possibilities, and needs all the capital she can secure in order to transform these possibilities into actualities. The fact that American money has helped to put our pulp and paper industry on its present solid basis has no bearing on the merits of inter-Dominion preference. — F. H. D.

THE PULP AND PAPER INDUSTRY WELL REPRESENTED

The Pulp and Paper Industry was well represented at the three day conference on research at Ottawa last month. Mr. H. F. E. Kent, president of the Association, Mr. O. F. Bryant, chairman of the Technical Section and Mr. Edward Beck, secretary, were interested attendants at all of the sessions. Mr. Kent explained the deep interest that the Pulp and Paper Association has in research matters, and the appreciation of this industry for scientific investigation of materials, processes and apparatus. Mr. Bryant outlined the work of the Technical Section and pointed out the valuable work that had been done by the committee on research, and the delegation voiced the hope of the whole Association that there will be established, in Canada, a Central Research Institute.

COBWEBS

The Rolland Paper Company are commemorating, by means of an attractive folder, the making of the first sheet of Bond of paper in Canada by the late Senator Rolland who founded the first mill of the Rolland Paper Company at St. Jerome, Quebec in 1882 — a little more than 40 years ago. Their Superfine Linen Record captured the gold medal at Antwerp in 1885, the highest awarded the World's Fair in Chicago in 1893, and the Grand Prix at the Paris Exposition in 1900.

BRITISH BUY CANADIAN WALLPAPER

A special despatch to the "Montreal Gazette" says that Canada is reputed to be the biggest buyer at the British Industries Fair at the White City. During the first week Canadians outbid even the Americans. Canadian manufacturers, who are exhibiting at the fair for the first time, also report good business, particularly in two unrelated products, condensed milk and wallpaper.

A marked improvement is noted in the export business, repeat orders are continually being received, and the product and handling of same favorably commented upon.

Proceedings of the Woodlands Section Meeting

The Sixth Annual Meeting of the Woodlands Section, Canadian Pulp and Paper Association, held in Vice-Regal Suite, Ritz Carlton Hotel, Thursday, January 25th, 1923, opened at 10 a.m. with Mr. R. P. Kernan, in the Chair.

Minutes of previous annual meeting were read by the Secretary, and on motion, duly seconded, were adopted.

The Chairman, in his opening remarks, outlined the objects of the Woodlands Section, and strongly favored the appointment of a practical man to act in the capacity of permanent secretary, whose duty it would be to collect and compile data, conduct investigations, etc., as to how improvements and economies could be affected in present methods of logging operations.

"Progress of Research Work in Forestry in Canada" was the subject of an interesting address given by Mr. Ellwood Wilson, of the Laurentide Co., in which it was pointed out that while considerable progress has been made in recent years along the lines of Scientific Research, great opportunities still exist in the Woodlands Section for the broadening out of such Research Work. Conditions of climate and soil should be studied before seeds are planted; driving operations in this Country when compared with those in Sweden and Scandinavia show great room for improvement in our methods. As pointed out by the Chairman an energetic permanent secretary, experienced in woodlands work, should be able to collect information which when properly distributed to members should be of great value.

"Progress in Cost Accounting for Logging Operations" was the subject on which Mr. L. W. Campbell, Chief Accountant, Laurentide Company, Limited, read a paper. Mr. Campbell explained that back in 1916 members of the News Print Service Bureau felt that a standardized method of obtaining the actual cost, of manufacturing newsprint paper was necessary, not only to teach the mills what their costs actually were but to enable them to exchange conversion figures for the purpose of reducing conversion costs. Mr. G. A. Ware, was engaged by the News Print Service Bureau to study the matter, and after meetings of accountants were held, standardized forms were finally adopted which were now being used extensively. These forms were explained by Mr. Campbell and considerable discussion followed. Questions arose as to the working out of the accounting scheme referred to so far as cullers were concerned, others had difficulty in keeping proper check on their stable expenses. Mr. Campbell expressed the opinion that the proper working out of the scheme depended primarily on the type and experience of the man in charge of operations at camps. Considerable doubt existed as to the possibility of getting properly qualified men to stay in the woods and Mr. Campbell suggested a scheme of offering a bonus, or perhaps it would be necessary to offer monthly vacations with full pay.

The Chairman named as a committee on resolutions, Messrs. Ellwood Wilson, Avery and Chandler, and, as a committee on nominations, Messrs. Avery and Chandler.

Ajournment for lunch was taken.

Meeting reconvened at 3.15 p.m.

"How far can the Pulp Mill go in utilizing Decayed, Insect Killed or Other Inferior Wood in the Manufacture of Pulp." A paper on this subject was read by Dr. J. S. Bates, of The Bathurst Co., Limited, and Messrs. C. S. Hawkings, Chief Chemist and Mr. Otto Schierbeck, Forest Engineer of Price Bros. & Co., Limited. Dr. Bates paper appeared in the Pulp and Paper Magazine for January 25.

Considerable discussion ensued as to what effect sprinkling of piles for fire protection would have on the spreading of rot in wood, also the effect of climate. Experience showed that the colder climate was not as conducive to the spreading of rot as the milder climate, the content of moisture apparently having considerable effect. Tests were made at the Kenogami Mill of Price Bros. Co., Limited, to try and discover to what extent they could use the rotten wood, and results are dealt with in Mr. Hawkings' paper.

The Committee on Resolutions submitted the following:—

"RESOLVED — That the Woodlands Section strongly recommends to the Executive Committee of the Canadian Pulp and Paper Association to grant sufficient funds to enable the Section to engage a technical man as Secretary and Adviser.

CARRIED.

"RESOLVED — That any information obtained by such a Secretary shall be submitted only to Company Members of the Canadian Pulp and Paper Association.

CARRIED.

"RESOLVED — That the Woodlands Section most heartily thanks Mr. Kernan for his long continued and great efforts on behalf of the Section.

CARRIED.

"RESOLVED — That a committee of three Woodlands members and three Accountants should be appointed to investigate and recommend means of utilizing the information which was obtained by the committee on standard logging costs.

CARRIED.

The Chairman suggested that the appointment of such a committee as referred to in the last resolution would be left to the incoming Executive.

Nominations were then called for Officials for the ensuing year, when the following names were submitted:—

For Chairman — Mr. Ellwood Wilson, Laurentide Company, Limited.

Vice-Chairman — Mr. Herman Schanche, Abitibi Power and Paper Co., Limited.

Councillor — Mr. W. McE. Bowden, Laurentide Company, to take the place of Mr. Wilson.

Mr. R. P. Kernan, Donnacona Co., to take the place of Mr. T. F. Kenny, whose term has expired.

Other nominations were called for, but none being offered the above officers were declared elected.

The new Chairman took the Chair.

On motion of Mr. Kernan, duly seconded, the Secretary was instructed to see that copies of all papers read at this meeting would be forwarded to Mr. Stephenson, of The Pulp and Paper Magazine, with a view to having them published.

Carried.

There being no further business, the meeting adjourned.

PROGRESS IN COST ACCOUNTING FOR LOGGING OPERATIONS

By L. W. CAMPBELL, Chief Accountant, Laurentide Company

Possibly if I were to christen this paper "What do we do with 50 cents of every dollar entering into the cost of a ton of paper", it might seem more interesting. It's a fact that wood represents nearly half the cost of a ton of paper.

Up to date cost systems have been installed in our mills, the operation of which has justified one hundredfold the expense of their installation, but how much attention have we given to cost finding in the woodland and of our business?

How many of you men here to-day, accountants, logging operators and executives, are confident that your logging costs are as accurate as they might be, or satisfied that you are getting one hundred cents value out of every dollar you spend in the woods?

As you are either not altogether satisfied or too modest to admit it, I will try and outline briefly what accountants have been doing and what they would like to do along logging accounting lines:

In 1916, which is away back in the Dark Age as far as paper mill accounting and cost work is concerned, certain members of the News Print Service Bureau conceived the idea of standardizing a plan for finding the Cost of Manufacturing Newsprint.

They believed a plan of this kind was necessary for two reasons:

First, it would teach each company what its costs actually were, a thing many of us found out to our sorrow that we did not know during the late Government investigations into the cost of manufacturing newsprint.

Second, it would allow the interchange of conversion figures between mills for the purpose of reducing those costs.

In order to accomplish this work, Mr. G. A. Ware, a chartered accountant formerly with Price, Waterhouse & Co., was engaged by the News Print Service Bureau and told to get busy. He has been busy ever since.

As a starter a series of meetings were held, attended by cost men and accountants in the industry, in order to pass upon each item that would appear on our standardized cost sheets.

After these cost sheets had been completed and methods standardized for securing figures to be entered on these sheets, Mr. Ware was sent out to explain the plan to the different mills. He has succeeded in getting the system adopted by about 95 per cent of the companies reporting to the News Print Service Bureau.

This work naturally extended over two or three years and during that time meetings were held at which cost men and accountants were invited to put their cost problems up to the other members for advice and solution. About two years ago we had progressed far enough to enable us to begin to exchange monthly conversion costs and production statistics. This exchange was accomplished by each mill sending its figures to the News Print Service Bureau where the details were compiled on one sheet and sent to the reporting members.

These comparative conversion costs give a mill operator a mark to shoot at. He can see just where he is higher or lower than the others.

For instance, if he notes that a certain mill shows consistently low clothing costs, he investigates and perhaps finds that they are using a certain grade of clothing or handling the clothing in a particular way on the machines. He takes advantage of the idea and down come his costs. Many thousands of dollars have been saved in this way and we expect to have many more in the future.

During meetings held for the purpose of settling some of our mill cost problems questions often arose as to what we were doing with our woodland accounting and logging costs. These questions were very embarrassing to most of us and in fact we had to admit that our accounting and cost work for this particular branch of the industry was in a much worse condition than our mill costs were in 1916.

To correct this condition, Mr. G. A. Ware, whom I have already mentioned, was requested to draw up and submit a uniform method of cost accounting for logging operations to a committee formed of representatives from Price Brothers & Company, Spanish River Pulp and Paper Mills, St. Maurice Paper Company, International Paper Company, Abitibi Power and Paper Company and Laurentide Company. A plan was submitted and endorsed by the committee and appeared in booklet form last June, a copy of which I have here before me. Here is the book.* It contains sample forms and names of accounts with instructions for handling them. If its instructions are followed you will soon know more about what happens to the 50 cents in every dollar that goes into the cost of a ton of paper. If a number of us adopt the plan, it will not be long before costs will be exchanged and costs will begin to come down. Two large companies have already installed systems based on this plan and I know that both are quite pleased with the results obtained.

I will attempt to describe briefly a few of the reports which are being compiled by the Accounting Department of one company for the use of its Woodlands Manager and District Superintendents.

First, monthly and cumulative statements of the cutting and hauling costs, showing quantities, expenditure and unit costs in detail.

Before I go any further I would like to mention the fact that we have no uniform measuring stick for determining our Cutting Costs.

Some companies use board feet.

This is not accurate, as the relation between board feet and the pulp content or solid content of a log varies according to its diameter.

Other companies use cord measure, but how are we going to determine the number of cords from diameters?

Who can tell us how many 7 or 8 inch logs of a given length will make a cord? This is something we ought to know if full value is to be obtained from our Cost figures.

Second, statement showing list of jobbers, quantity contracted for, and price. Opposite this information is shown quantity cut as well as the total amount of the cash advances and charges against the jobber for the period, also what these advances represent per 1,000 feet of wool produced by the jobber. A comparison of this latter with the contract rate will indicate whether the superintendent should close the jobber off, or allow him further credit for the continuance of his operations. This particular statement shows the condition of each jobber's account up to the end of any month, but, if the superintendent desires, he may obtain from the District Accountant the standing of any jobber's account up to the end of the preceding day.

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* This excellent outline of Woodlands Cost System is on sale by the News Print Service Bureau, 342 Madison Ave., New York.

Third, statement showing cost per meal as served in each camp or boarding house. This expense is divided under Foodstuff, Labor and Miscellaneous and shows monthly as well as accumulative costs. The cost of feeding men is a very important factor in the cost of wood production. This year it is estimated that the cost of meals will equal an amount of 40 per cent of the direct woodlands payroll. This statement for meal costs will plainly show extravagance or inefficiency, and the cook may be educated or discharged as the superintendent sees fit. Camp cooks are often wasteful. I have often thought that a bonus system installed to keep these men on their toes would be well worth the money.

Stable Costs: Statement shows cost per horse meal in each camp under heading of Fodder, Labor and Miscellaneous. It also shows proportion of idle time which if great would indicate poor care of horses, or that the camp had more horses than required.

Supplies: Perpetual inventory ledgers are used to report supply transactions. A statement is compiled monthly showing the total value of supplies in the districts. It shows amount of supplies purchased and transferred from one point to another. It also records the value of supplies sold to jobbers, to employees and supplies used for company operations, as well as the value and particulars of goods that have been spoiled or depreciated. Subsidiary statements which tie up with the foregoing are available which show the value of supplies in each hangar under the following headings:—

Provisions
Tools and Equipment
Hardware and Miscellaneous
Table and Cooking Utensils
New and Spare Harness Parts
Clothing
Dry Goods
Medical and Toilet Articles.

Details showing quantity and value of each individual supply can be furnished the superintendent if he desires.

There are many advantages to be obtained by this method of recording supplies. It reduces cost of operations by allowing the superintendent to carry the minimum quantity of supplies necessary for the carrying on of operations, thus reducing working capital and cost of insurance on goods, and loss by spoilage or depreciation. It plainly shows what articles are moving slowly in the van accounts and are therefore unpopular with the men and in many cases should not be carried in stock.

It automatically records and brings to the attention of the superintendent all depreciation and loss by spoilage. If this account is out of proportion it will indicate either inefficient store-keeping, in which case the cure is obvious, or poor storing facilities. In the case of the latter, it is up to the superintendent to decide whether to repair or rebuild.

All of these monthly statements which I have described are available for the district superintendent within two or three days after the close of each month. This result is obtained by closing our month's business on the 27th or 28th day, depending on distance of operations from the district headquarters. Copies of all figures are sent to Head Office from each district or division. They are all prepared in standardized form and are consolidated on a comparative statement for the use of the Woodlands Manager. These statements are usually completed between the eighth and the tenth day of the following month. Comparison of these figures by districts will show at once which district needs immediate attention.

You have noticed no doubt that the system has been drawn up with the object of helping the operator by giving him accurate costs and statistics while they are still hot.

Logging costs or statistics are absolutely of no value unless they are accurate, and when possible they should be compiled in such a manner that they may be used for comparative purposes either internally or with other companies. For this reason it is imperative that a man skilled in accounting and costs be given full control of the cost work and also control of the necessary clerks who must handle the timekeeping and payroll and stores.

In connection with this point I will read you a part of the recommendations of the committee who endorsed Mr. Ware's system of cost accounting for logging operations:

> "The successful carrying out of this proposed system is dependent largely upon the personnel of the Depot and Camp Clerks. The Committee recommends very strongly that the appointment and supervision of these men be left exclusively in the hands of the Cost Department. This has been tried out in practise with very satisfactory results. It is further recommended that the Bureau Service be made available to all members desiring assistance and advice in the proper installation of the system."

The Committee were following mill organization lines in making this recommendation. The Mill Superintendent of to-day is too busy making paper to worry about how costs are compiled, who pays the men or looks after the supplies. Experience has taught him that accurate costs will be furnished him at the end of each month and that he can obtain on a minute's notice exact quantity and price of any supplies on hand. Why shouldn't the Logging Superintendent get as much benefit from the Accounting Department as our Mill Superintendent? We could save him the same amount of distasteful work and worry.

Why not go to the logging operator and say "Let me help you cut that wood by keeping you supplied with up to the minute costs and statistics." Of course, when outsiders step up and offer free help and assistance, it often makes a man wonder when the joker will show up. Here is the only joker in this case: Accountants are in urgent need of this system in order to ascertain the true cost of wood delivered to the mill as well as to determine the proper amounts that should appear as assets and liabilities on their financial statements submitted to the management and directors.

In view of this need of the accountants and the need of the logging operators for accurate costs and statistics to enable them to cut costs, why can't we get together on this plan? According to reports, 3,750,000 cords of wood are consumed by the requirements of the paper industry alone in the United States and Canada necessitating a yearly expenditure for logging operations of over $50,000,000.

Let us suppose that by the use of this plan or by any other means we can cut our costs by 2 per cent. This will result in the saving to the industry each year of $1,000,000. I have often heard it said that the first million is the hardest, so there is no telling how much we may save if we go after it right.

Fifty millions per year. Do any of you know of any other industry which spends this amount or even one-tenth of it annually, without a first-class accounting and cost system?

Turn any business loose to-day, forget costs and financial statements, and how long do you think it would be before its skin would be nailed up on the barn by its competitors?

New scientific logging methods are being advanced each year; some will suit your conditions and some may not. Without doubt you will adopt those that look good. Why not have a cost system that will tell you at the end of the season whether the change was advantageous or not?

Shrewd mill management and scientific operation, as we understand them to-day, began only after proper methods had been established for obtaining costs of this or that operation in cold dollars and cents.

Wood at present represents 50 per cent of the cost of a ton of paper. What part will it represent during the next ten years? Due to the increasing demand for newsprint more and more wood must be cut each year and, as men are becoming more and more unwilling to go to the bush when anything else offers, it would appear that logging costs must steadily increase.

We are face to face with this great problem of increasing costs. Let us put our house in order now and rob the blow of some of its sting by adopting methods that will allow us to watch and check carefully every dollar spent in woodland operations.

I am of the opinion that a bit of salesmanship on the part of the accountants and a little co-operation on the part of the logging operator is about all that is necessary for the installation and success of this system of cost accounting for Logging Operations.

Gentlemen, let us tackle this work with the same perseverance and determination as that shown by the cat who climbed a fence and gazed down into a railway cutting and saw the track disappear into the mouth of a tunnel. She settled down on a post and muttered to herself "I'll catch the mouse that dug that hole if I have to stay here for life."

DISCUSSION ON USE OF ROTTEN WOOD

Remarks of Mr. Otto Schierbeck

Mr. Chairman and Gentlemen:—

We have just had the pleasure of hearing Dr. Bates on a subject on which he is admittedly an authority namely, the utilization of rotten wood in the manufacture of pulp. He has covered the ground very thoroughly and I only hope that the practical suggestions he has made will be adopted.

Your Chairman has invited me to participate in the discussion following this paper and as I have studied this question rather thoroughly since the days when Dr. Bates and myself were working together in Kenogami, you will, I hope, forgive me if I go somewhat lengthily into the matter.

Before doing so, I have to acknowledge the great assistance I have received from Dr. Faull of Toronto University, who has been co-operating with me in the study of this problem and I would like to take this opportunity of expressing the opinion that Dr. Faull is doing splendid work for Canada in his careful, untiring and disinterested study of this, the most important problem which you have to face today.

When you recall the many problems that exist, you may think I am exaggerating in describing this as the most important, but I will endeavour to justify the statement. As you are aware, the Budworm attacked our Balsam trees in 1910. It killed from 25 to 30 per cent. of the trees right off and in addition left the remainder open to subsequent attacks by insects and fungi, which has done and is doing far more damage than the budworm itself did. The gravity of this attack is beginning to be understood — this discussion today is a proof of that — but I do not think that, even yet, its seriousness is realized by those whose interests it affects so adversely. The result of these attacks is that we find all over our forests, a number of areas, of varying sizes, denuded of timber, the latter lying around as "Windfalls". The balsams in the surrounding areas, although still standing are weakened by the attacks of the secondary pests, especially a fungus which causes a rot in the upper part of the trunk.

These denuded areas, or "Windfalls" are increasing in size every year, especially during the spring storms and they form breaks in the forest mantle.

The effect of these breaks I can best describe by asking you to consider them as breaks in a gravel embankment menaced by a flood. As long as the embankment remains intact, it can resist the flood, but, once allow a few breaks to appear and you know that happens. Now, you have an exact parallel in the forest. The unbroken forest mantle is your embankment, the windfalls are the fissures and the spring storms are the floods and you will see that the coming years will bring a great increase in the number of windfalls, leaving an immense amount of chicots and fallen trees, which, if not already affected by the rot fungi will very shortly become so.

For the future, therefore, the great question for the Forest Engineer is Salvage, and for the Mill Manager the utilization of rotten wood.

These are facts which are already recognised by many Companies in Canada and in America, where, as you know, largely owing to the neglect of just such problems the situation is acute.

I regret that I have to paint such a rather sombre picture, I would much prefer to be able to congratulate you on the healthy state of your forests but you are business men and I know that it is much more honest, if less palatable, to look the situation straight in the face and endeavour to make the best of it today and to prevent it for the future.

I am glad to say that the situation is not nearly so bad in the unexploited Virgin forests. In some of the large areas of Messrs. Price Bros. which have not yet been exploited, the forest have to a great degree recovered from the attacks, but in the areas where cutting has been carried on the damage is appalling.

Let me try to bring home to you what this rotten wood really costs. You are paying for it at least five times.

First through the jobbers, who now understand the situation in the forest quite well and know that they must demand a higher price for cutting in areas where there are a lot of culls. In this connection I may add that in cutting these attacked areas we are, to a great extent, working in the dark. Some Companies leave all chicots in the woods, others cut them all, while yet others allow the jobber to decide, after he has notched the tree, whether he will cut it or leave it. You should start felling experiments, so that you may know whether it does or does not pay to cut these chicots.

You should get away from a standard length of log. Many a log of 13 ft. is culled, because it is rotten at one end, when, by shortening it you might get a perfectly good 10 ft. log. The advisability of butting should be very carefully gone into and adopted generally if feasible.

You pay for your rotten logs a second time in the drive. It costs you just as much to throw a cull into the river and drive it as it does to drive a sound log.

The third time you pay is when the cull is taken to the wood room, operated on and carried to the log pile.— It costs just as much to bark and slash a cull as a sound log. One of the most important factors in this problem arises when these culls are in the log pile. – To what extent does the rot affect the sound wood in the pile. We cannot give definite figures, but we know that these rots work with great rapidity and when you remember that many of your log piles are three years old before the wood is actually used, you will see my point.

Reliable information on this point is badly needed and I strongly recommend you to take it up. Perhaps it would be advisable to separate the good from the rotten wood, and a definite proportion of each used for experimental purposes.

You are paying a fourth time for the rotten logs when they go through your mill, they take up just as much room as a good log and use up your cooking liquids uselessly.

Lastly you pay for them in the deterioration of your paper. So that they are actually a very great positive loss and not merely a negative loss.

With the help of Dr. Faull, I have separated these rots into five distinct classes. I have had lantern slides made of log sections showing these rots and have pleasure in showing them to you now. You will see that they are very easily distinguished and are quite different with regard to their effect on the paper. There are four of these rots which affect Balsam.

Type 1 is called Pig Rot. It is caused by *Polyporous Schweinitzii* or Polyporous balsameous. It is a characteristic Butt rot. Infection takes place in the roots or basal parts of the trunk. The decay starts in the heart wood but works outwards and eventually even the sapwood is involved. The trees become so weakened at the base, that they become wind thrown, the break taking place in the lower part of the trunk.

Ordinarily this type of rot does not extend very far up into the stem so that some logs can almost always be cut from affected trees. The rotten parts of the tree are, as you see, very much discolored. It crumbles into powder form and is absolutely useless for pulp. Logs affected by this rot are always sinkers.

Type 2 is Feather Rot which is caused by *Poria subacida* and is also a butt rot. Infection takes place in the roots or lower portion of the trunk and works up — but usually only for a short distance, and several logs can generally be obtained from an affected tree. — The heart wood becomes yellowish in color and pitted in concentric lines following the annual rings. The rings of the pitted wood separate one from another and the wood becomes more or less shredded. These trees are often wind thrown and when broken off this pitted or shredded wood may be seen sticking up rather like the bristles on an old broom.

This rot is mostly responsible for what is generally known as Hollow Rot and when trees affected by it become dry they are extremely inflammable and when present in large numbers, seriously increase the fire danger in the woods and log pile.

It does not seem to affect the color or strength of the paper and very few logs with this rot are sinkers.

Type 3. Hemlock Rot is by far the most common and dangerous of all the heart rots of balsam and is, in my opinion, causing more damage than any other fungus in the forest. It is costing Canada millions of dollars every year. — The causal fungus is unknown but is being closely investigated.

This rot enters the weakened tops or by way of dead branches in the lower part of the crown. It works down the trunk and it is quite common to see an attack from the top going down 15 or 20 feet, then disappear and further down the trunk to find another attack originating in a broken branch.

The reason why this fungus has spread to such an enormous extent is, in my opinion that there are such a large number of dead tops left by the budworm, which has killed the tops by defoliation. When this takes place, the side branches try to take over the role of top but are frequently again destroyed by the budworm, so that a number of dead tops are to be found on the trees. These dead tops are excellent points of attack for fungi and as I have already said, they have undoubtedly assisted to spread the disease. The affected wood turns dark brown and on a cut, especially when wet, closely resembles the heart of hemlock; hence the name. This affected wood is, to greater or less extent, motted by patches which for a time remain sounder than the surrounding areas.

The fibres of the affected wood appear to remain intact for a longer period than in the case of butt rot, so that in the early stages of decay, it would appear that a considerable amount of wood affected by this rot might be utilized in your mills experiments to decide to what extent this wood is unuseable should be commenced at once. In these and other similar experiments there should be close co-operation between the mills and the Logging Division so that the scalers may learn to what extent each kind of rot should be accepted.

I want to emphasize the fact that this is most important — more than two thirds of the culls belong to this class of rot and more than half these can probably be profitably used in the mill. The point is, therefore, first to determine the permissable percentage and then make the scaler understand that only this amount of Hemlock rot must be brought to the skidways.

At present you have no uniform system in this matter — some of you cause all the rotten logs to be hauled to the river; others allow the jobbers to leave in the woods those logs which they think the scalers will reject but in all cases far too much rotten wood is hauled to the river. If it is known that a log is too rotten to be profitably used at the mill, it should be left in the woods, but on the contrary it is a definite waste to leave in the woods logs which you know it will pay you to haul and drive.

Your scalers must be taught these things and then they must explain to the jobbers what may be hauled and what must be left.

Type 4 — Sapwood Rot — This is caused by a number of fungi of a lichen-like appearance and is only found in dead trees. Most of this rot disappears in the barkers and does not therefore adversely affect the pulp. The wood inside the sapwood is usually sound except in some cases, where it is affected by the blue stain timber fungus which discolor the paper and might also spread in the wood pile and cause considerable damage as this fungus spreads with great rapidity.

These are the four rots commonly found in balsam and they should be studied by and known to every superior official in the Pulp and Paper business.

The *5th type* of rot is only found in spruce and is caused by *Trametes pini,* and is responsible for practically all the rot in spruce. It may be found in any part of the trunk. In its action the causal fungus first dissolves out the lignin, in spots, leaving areas of bleached cellulose threads. In the earlier stages of decay, the wood affected by this fungus is useable for pulp. It is within my knowledge that in America, in states where this fungus is very common, the affected wood was sorted out and under special treatment, a very fine paper was made from it.

I hope I have not tried your patience by going too much into detail on this question, but as I said before, it is of such vital importance to you that no apology should be necessary. You must give this matter more attention. I confess that I cannot understand how you business like, hard headed Canadians, who in your mills are the last word in efficiency and who are prepared to spend many thousands of dollars in inventing labor saving devices and analyse with minutest care your raw chemicals etc., etc. can go along as you have been doing and neglect the greatest of all — in fact your only real raw material — your forests, and if this conference results in you deciding to give the matter the attention it undoubtedly deserves it will not have been held in vain.

PULP AND PAPER SCHOOL SLATED FOR THREE RIVERS

Though no official announcement is forthcoming before the return of Premier Taschereau, the Telegraph asserts Quebec that the city of Three Rivers would be the chosen site for the erection of the paper school, legislative provision for which was made at the last Session.

Two points had been suggested as advantageous for such an institution, Shawinigan and Three Rivers. After taking the advice of experts in the matter and interested pulp and paper manufacturers, it is authoritatively stated that the latter city has been found more suitable to meet the requirements of such a school.

The school will be operated under control of the Provincial Government, but the pulp and paper mill owners will co-operate to a great extent as the institution will supply them with experts within a short time.

The construction of the school will start early this spring and will be completed on time to be in full operation next fall.

The Forestry Educational System in this province, which is under the direction of Messrs. Gustave Piché, Chief Forestry Engineer and Mr. Avila Bedard, his assistant, will be a complete one.

The complete curriculum of the new system will include study at the present forestry school, the pulp and paper school, and practical courses where forest rangers will be able to receive instructions regarding the protection of forests against fires.

Protection of Forests

The 1923 program of the Department of Lands and Forests to reduce the losses through forest fire to a minimum has not yet been announced.

The closing of the forests, through the issuance of permits, will, it is stated, be revived this season. Last year the system produced good results.

* * *

The remarks of Mr. Hawkings of Price Bros. will appear in the next issue.

NEW BRUNSWICK NEWS

Hollingsworth and Whitney are the mysterious concern which has been reported as about to establish a paper mill in St. Stephen, N. B. For some months, engineers and surveyors have been at work in and about St. Stephen, investigating possible sites for a paper mill. For some time the identity of the firm responsible for the investigations has been shrouded in mystery. St. Stephen is directly on the Maine border, and on the east bank of the St. Croix river, which forms the international dividing line. Hollingsworth and Whitney have also taken over the old Eaton saw mill property at Milltown.

Pulpwood operators have been reducing their cut of late weeks, there being somewhat of a glut on the market, for the present. The operators have been hampered somewhat during the winter by the excessive snowfall during the months of January and February especially. Some of the operators have not been able to cut during February at all owing to the deep snow in the woods of New Brunswick. Not only has the work of the horses been impeded in the woods but the men have been greatly handicapped. Some of the operators did not cut a log during the month of February. At a number of the pulpwood cutting camps in the New Brunswick woods the men have been confined to the camps for days in a period.

Pulpwood operators on the north shore of New Brunswick have been the pioneers in cutting pulpwood with the aid of electric current. These operators have been utilizing the current from the hydro station at Great Falls on the Nepisiguit River in Gloucester County, New Brunswick. Electric motors have been installed at the pulpwood camps, and the use of the current has been pronounced satisfactory although the price seems to be higher than expected. Hopes are held out that in the not distant future, the price of the current will drop to a more satisfactory unit. Operators of lath mills have also been utilizing the current along the north shore of New Brunswick.

W. B. Snowball, president of the Snowball Lumber Company at Chatham N. B. is a great admirer of the Quebec laws affecting manufacturers. Mr. Snowball has been frequently criticising the laws of New Brunswick and the tendency to discriminate against the manufacturers. He points out the defects of the New Brunswick Workman's Compensation Board. Instead of contributing to the expenses of the board the workman pays nothing and reaps the reward at the expense of the manufacturer. Like Angus McLean, president and general manager of the Bathurst Company, owners of a pulp mill and a paper mill now under construction at Bathurst, Mr. Snowball believes the expenses of the Workman's Compensation Board of New Brunswick are really out of all proportion. Of the money paid out by the board more than sixty per cent goes under the heading of expenses and not benefits. Mr. Snowball has often intimated that he is considering the removal of his interests from New Brunswick to Quebec.

The new paper mill of the Bathurst Company at Bathurst is being rushed to completion although the heavy snows and bitter cold of this winter have interfered considerably with the construction operations. It is felt however, despite the drawbacks that the mill will be ready for occupation about the first of May.

Efforts have been made to assure for New Brunswick representation on the C. N. R. board instead of having the three Maritime provinces grouped together as at present. Angus McLean has been spoken of as a likely

Why Your Middle-Aged Men Quit Work

By CLAUDE CAMPBELL
Research Assistant in Business Psychology
Indiana University

In "Industrial Management"

I was talking with an industrial manager a few days ago. "During the last few days," he remarked, "I have had an unusually large number of men from forty to forty-five years of age quit their jobs; and they seemed to have no definite reason for doing so."

"Thinking employment managers everywhere," I told him, "are complaining of exactly that same situation."

"Do you know of any investigation that has been made in an attempt to solve this problem?" he asked.

"Yes," I replied. "A few months ago Dr. Harry D. Kitson, Professor of Psychology at Indiana University, had this fact called to his attention by several industrial men. He made an extended investigation, examining the service records of 2,500 metal workers and furniture men, who had quit their jobs. The complete results of this investigation are published in "The Journal of Industrial Hygiene" for September, 1922."

"Just how did he proceed to conduct this investigation, and what did he find out?" the industrial manager asked.

"The first step was to get the ages of the men and the length of time each had worked prior to his resignation. The ages were taken at the time of hiring and the length of service was taken in weeks. The men were then classified into age groups of five years each and the average number of weeks for each period were calculated. (See illustration page 120).

"He found that there was a relatively short period of service for the men under twenty-five years of age; on the average about nine weeks. This is just as we should expect, because youth is the time of instability, of search for the right job, and of freedom from responsibilities."

"Those men between twenty-five and thirty-five remained on their jobs for a relatively long average time. This is easily understood, because at this age men are usually rearing children and paying for a home, and economic responsibilities are pressing heavily upon them."

"As would be expected, there was a still greater stability on the part of those over fifty, who realize that they would have difficulty in securing another job."

"Between the ages of thirty-five and fifty the investigator did not find the conditions that you would expect at first thought. It would seem that the period of service would increase regularly with increasing age. Contrary to this, we find that at the age of thirty-five the length of the period of service decreases and reaches a minimum between forty-one and fifty. This means that the last named period seems to be a very critical time when the workers give up their jobs with unusual frequency."

"This is a very interesting situation," the industrial man mused, "Does Dr. Kitson offer any explanation of the probable causes of this critical age period?"

"Yes, he suggests three possible explanations," I told him. "In the first place, by the time the laboring man reaches forty, his children are usually old enough to take care of themselves or at least to give material aid in supporting the family, and thus the father may feel a greater degree of freedom in leaving one job to seek another. Then, as a man nears forty, he realizes that the period of declining strength is not far distant; and he feels the necessity of providing for his old age. If he sees no future possibilities in his present job he may leave it to seek employment elsewhere. The other explanation suggested by Dr. Kitson is that there are possibly some deep-seated physiological changes within the man himself."

"I happen to have here in my portfolio a reprint of this article of Dr. Kitson's and if you like I can read what he says about these physiological changes."

"I should like very much to hear it," the industrial manager answered.

I took the paper from the portfolio and read, "Just as woman at approximately the age of forty-five undergoes the period of change known as the menopause — a period characterized by glandular and organic adjustments and psychic disturbances more or less serious in character — so the male as he reaches the same age probably passes through a similar period. Because the symptoms are not so highly marked in the male, the occurrence of the phenomenon is not so universally recognized even by the medical profession. Mendel, however, and Church, called attention to it about a dozen years ago, alleging that it lasts from eighteen months to three years, and manifests itself in the following symptoms: high arterial tension, digestive and intestinal disorders, headaches, quick fatigue, oppressed feelings in the chest, sudden sensations of an alarming nature, especially vertigo. Most striking of all are the psychic accompaniments of the period an almost invariable tendency to mental instability, sometimes leading to actual insanity, sometimes consisting merely of what Freud calls an 'Anxiety-neurosis' (directed perhaps, to the period of impotence, which is due in ten or twenty years).

"It is interesting to note in this connection that the age at which persons coming down with senile dementia begin to come to state hospitals for mental diseases is between forty and forty-nine, and that patients suffering from general paralysis are admitted in greatest number between the ages of forty and forty-nine."

"We may reasonably believe, therefore, that there is a period in a man's life when he becomes especially unsettled mentally, and that his uneasiness expresses itself in the special frequency with which men included in the investigation here reported quit their jobs."

"Probably no one of the conditions is the sole cause for the readiness of workingmen to quit their jobs at this age. Perhaps all of them have some contributing effect; at least that is my opinion," the industrial man said. "However, we practical men are not so much interested in the reasons as we are in the demonstration of the fact, that middle aged men do leave their jobs with unusual readiness.

"It seems to me as though it would be a good policy for us to exert some added efforts for holding our middle aged men at work. There are several things that we might do to accomplish this. We might keep a very vigilent eye upon our men and watch for any signs of restlessness and irritability, and when these symptoms of the critical age appear they should be handled with a great deal of care. The men might be given a change of job within the plant, more money, added responsibility, or some goal to work for, such as the promise of a better job in the future. Again we might offer a prize of, say, one hundred dollars to every man who is fifty years old and who has been in the service of the company for at least fifteen years. For my part, I am going to see if I can't devise some system by which we can hold our middle aged men at work."

British Trade News

(From Our London Correspondent)

London, February 17, 1923

Recent troubles with workers in the British paper industry have reached an amicable settlement and once again peace reigns supreme. These spasmodic outbreaks cannot be helped where there are paid agitators, but all the same they are most harmful by impeding the work of a mill.

Newfoundland Report

In the report of the Anglo-Newfoundland Development Company, Ltd., for the year ended August 31, 1922, the directors state that after making provisions for depreciation of buildings, plant, machinery, houses, furnishings, etc.,—and after charging interest on the first debenture stock and the 8 p. c. guaranteed second mortgage debentures—and providing for income tax and corporation profits tax, the profit was £241,563 2s. 11d.

The report adds that in accordance with the terms of the trust deed, the sum of £10,000 together with the amount of interest on stock already cancelled, has been paid to the trustees for the first debenture stock holders and by them expended in the purchase of first debenture stock for cancellation. The directors have written off out of profits the remaining balance, viz., £40,000 of the cost of issuing the £800,000 guaranteed second mortgage debentures.

After paying the preference dividend, goes on the report, in respect of the years to August 31, 1920 and August 31, 1921, and providing for certain additional depreciation on sundry properties and additional depreciation on steamers, there remains a balance of £161,648, 5s. 8d. to be carried to the balance sheet out of which the directors now propose paying the dividend to August 31, 1922 on the cumulative preference shares.

Lord Northcliffe's Successor

Lord Northcliffe's place as a director— he was also one of the founders of the Anglo-Newfoundland Development Coy. Ltd.,,—has been filled by the appointment of Mr. Vynyan G. Harmsworth. Mr. G. F. Laycock and Mr. J. D. Gilmour of Grand Falls have also been appointed directors of the company.

At the same time as the company issued the annual report, the High Court in London sanctioned an agreement arrived at in regard to the will of Lord Northcliffe. Under the will the directors of the Anglo- Newfoundland Development Coy. Ltd., and the Imperial Paper Mills, near London, at the time of his death, will receive £1,000 each while employees of 3 years standing, not counting directors and managing directors, will be paid a sum of money equivalent to 3 months salary, wages, or commission.

The will further provides: "Judging by my experience at the time when "The Times" (London) newspaper was for sale and by the fact that I have declined one and a quarter million pounds for the shares of the Associated Newspaper Ltd. there will be undoubtedly persons and syndicates who will desire to obtain control of these newspapers and the vast Newfoundland concern which embraces an area exceeding 3,000 square miles, to whom it might not be desirable for patriotic reasons to sell the same. I therefore direct my executors to let the final choice of a purchaser of the said shares rest with my brother, Viscount Rothermere, if living, with whom I have discussed the matter and who will not dispose of these interests to any person who is not British born, nor to any company or syndicate who is not British."

In the event of Viscount Rothermere dying the executors are to follow the course laid down.

[It may not be generally known that the London correspondent of the "Pulp & Paper Magazine" was born within a village or two of where Lord Northcliffe was born. They adapted the same profession, journalism, and were old friends, as journalists.]

Pulp Imports

The official figures for January show that the following were the imports of wood pulp for the month:

1923	79,863 tons
1922	48,196 tons
1921	47,065 tons

Good shipments are still arriving from Canada.

The pulp market is very firm and groundwood is dearer. Prices in London are about as follows:—

Bleached sulphite £23 1-2; Easy bleaching £16; newsprint quality (No. 1) £14; unbleached soda (No 1) £14 1-4; soda kraft £14; groundwood 50 p. c. wet

British Exports and Imports

During January exports of paper and cardboard from the British mills were as follows:—

1923	335,271 cwts.
1922	146,915 cwts
1921	221,467 cwts

The imports reached 981,529 cwts in January, compared with 688,688 cwts in January 1922 and 402,273 cwts for the corresponding month in 1921.

The Swedish Troubles

Up to the time I write no information has reached London of a settlement of the dispute between the Swedish mill owners and their employees. Negotiations for a settlement are in progress. The dispute has naturally reduced the supply of pulp coming into England and has influenced prices in London.

The Swedish Consul-General in London reports that 35 mills making sulphite and 16 soda pulp mills, as well as 25 groundwood pulp mills are affected. The workers idle number close on 15,000.

The Swedish paper mills still continue working, but for how long no one knows.

Swedish sellers of pulp in London state that the United Kingdom will for the present have to rely on Norway for pulp supplies. Canadians should note this and watch the British market—it is very important.

Britishers are getting tired of these Scandinavian troubles.

The Institute of Industrial and Domestic Arts

EDUCATION OF BRITISH PAPER MAKERS

Mr. A. W. Foster, secretary of the Paper-makers' Association, has addressed the following letter to the Original Society of Paper-makers, the National Union of Paper Workers, Printers, etc., and The Amalgamated Society of Paper-makers on the subject of Technical Education. The letter, which was addressed to the secretaries of the unions concerned, stated:

''I am addressing this letter to you on behalf of the Workers' Education Committee of the Technical Section of the Paper-makers' Association of Great Britain and Ireland, in the hope of inducing workers in paper mills, especially the young workers, to get interested in technical education.

''In the old days when paper-mill workers were bound apprentices they had at least some instruction from their elders as to the operations they were engaged upon. To-day there is no apprentice system and no regular means whereby the worker may learn the meaning of the operations on which he is engaged. Yet it is for the good of everybody concerned that every worker should have a knowledge of the process of paper-making, good for the worker himself, giving him chance of advancement which otherwise he would not have, and making his work far more interesting to him; good for the reputation of the mill in which he works, as competent workmen naturally make better paper; and good for the paper trade of this country as a whole, keeping up the high reputation which British paper has always had all over the world.

''The wish of the Workers' Education Committee is that every worker who wishes to learn should have a chance to learn, and I am writing this letter to explain how and when this can be done.

''To begin with, the student must secure a sound elementary education. If he has forgotten what he learned at the Council School, he can attend evening classes in arithmetic, grammar and composition and other elementary subjects.

''If he is well grounded in these subjects, and if there is a technical school in his neighbourhood, he should attend classes in elementary chemistry, physics, and mathematics, subjects which are taught in all technical schools. These classes will bring him to the point where he is ready to start on paper-making technical subjects, and this is the stage at which difficulties may arise. If he is near to one of the chief paper-making centres, such as Manchester, Dartford, Maidstone, Edinburgh, Aberdeen, Grimsby, Bury or London, he will find the paper-making courses are ready for him. If he is at a distance, however, he will find himself in a difficulty, and the Technical Section wishes to assist in such cases if possible. If such a worker will notify me, through you, that he is ready to take a course of instruction in paper-making, and that he honestly intends to stick to it — naturally we do not want to deal with people who will just make a start and then fall away — I shall be able to send him a set of elementary lectures on the subject, specially written for students of his type, and put him into communication with a member of the section who will undertake the duty of replying to any queries he may raise. By this means we hope that we may solve the difficulty of the 'lonely student.'

''I am aware that the operation of the three-shift system makes it difficult for workers to attend classes regularly, but if you can let me know of instances where this arises, we may, perhaps, be able to deal with it.

''The subjects on which paper-making instruction will be given are, briefly, as follows:

''Raw materials, their chemical and structural features; processes of proportion, boiling, washing and bleaching; beating processes, construction and working of beaters; dyeing and sizing; the paper machine and its processes, calendering and glue-sizing; proportions of steaming; principles of combustion; waste products and spent liquors; soda recovery; trade uses of paper; laboratory tests, sample for analysis, and testing of chemical qualities. Textbooks and works of reference are Cross & Bevan; Practical Paper-making—G. Clapperton (exclusive chapter on machines); Treatise on Paper-making—Hofman.

''I trust that your executive will be prepared to join hands with the Technical Section in a whole-hearted endeavour to enable every worker to secure a liberal education in the art and science of paper-making.''

Arrangements For Country Paper Mill Workers

This letter, Mr. Foster, in forms *The Paper Maker*, has borne good fruit and results up to date have proved most encouraging. The Joint Industrial Council have received a scheme for the arrangement for postal instruction of workers in country districts who are unable to attend classes. About twenty students have now been placed on the list and a well-known mill chemist has prepared a set of elementary lectures, copies of which have been sent to students. Members of the Executive committee of the Technical Section of the Paper Makers' Association have volunteered to act as postal tutors, each having a number of students. These tutors will answer enquiries and help solve difficulties.

FORTY-ONE STUDENTS ALREADY

Our last report from Mr. T. L. Crossley, who is introducing the courses in Pulp and Paper Making in the Spanish River Mills, announces an enrollment to date of 41 students. The youngest is 18 years old, and the oldest is 60. The 17 students at the Espanola mill are planning to organize a Student Club. This is an excellent idea, and might well be followed in other places where there are a number of students.

Mr. Edmond Piché is introducing the courses in the mills in British Columbia. On his way West, he stopped at Dryden, Ont. and enrolled seven students among employees of the Dryden Pulp & Paper Co.

STUDENTS' QUESTION BOX

Don't be bashful! If you want to know about something, ask. If you know the answer to a published question, send it in.

File No. 1 (a) What causes ''pitch'' trouble on a news machine?
 (b) Is this due to variation in the wood used?
 (c) Is it due to material always present in the digester, but rendered troublesome at times by different conditions of cooking or handling in the blow pit?

THE FIRST BOOK PAPER MILL IN THE WEST

Six years of industrial activity mark the progress of the Provincial Paper Mills, Limited, Port Arthur. Since the company took over the pulp mill of the Port Arthur Pulp & Paper Company in 1917, the plant has extended from a three quarters of a million dollars proposition to a two and a half million dollar industry. The achievement of this wonderful record was made possible by the application of knowledge and the foresight into the future demands of the pulp and paper consumers in Canada and the United States.

While the history of the Port Arthur Division of one of the largest pulp and paper concerns in the Dominion dates back to 1917, the official opening of the pulp mill did not take place until April 12, 1918, when a banquet was held in the Prince Arthur hotel at which, from the first product from the plant, was made souvenirs of the occasion.

Less than a year ago the Provincial Paper Mills, Limited, announced they were ready to commence construction of a one machine paper mill. A little more than a year ago the site on which the huge buildings of the mill now stand was a pile of rock. Eight months ago workmen commenced assembling the forms for the paper mill buildings.

Well Equipped Mill

To go into detail of the workings of the big mill or to describe the many features that label it the best equipped in the Dominion would require a great deal of space, but in order to give some idea of the value of the plant to the community figures may be given. This is quoted from the Port Arthur *News Chronicle*. The total cost of the mill is approximately $2,500,000.

The pulp mill plant has been increased by fifteen tons daily, to turn out book grade ground wood.

Before the construction of the paper mill the Company shipped fifty percent of the output of sulphite to home plants and exported fifty percent to American mills. The plant, in operation, will decrease the export by twenty-five percent.

Thirty Tons a Day

The one machine—and there is space for one more of equal capacity—will turn out thirty tons of finished product during the twenty four hour period.

Some of the finished product will be exported to the United States, but the greater proportion will be sold in Canada, which will considerably decrease the importations from the United States.

The plant is capable of turning out "rotogravure" paper such as used by many of the big Eastern dailies.

The mill's output for the coming year has been contracted for.

The machine for the mill was built in Canada as was a greater portion of the equipment.

The actual operating force of the mill will total 300, exclusive of the woods department. The woods department will take care of an additional 250.

The monthly payroll is estimated at $40,000.

Some Statistics

Water supplied to the mill through the company's pumping plant is estimated at 16,500,000 gallons per twenty-four hours, or three times the amount pumped by the Corporation to supply the entire city.

750 tons of China clay was imported from the English China Clay Company, in England, for the mill.

Sulphur is supplied from Louisiana, U. S. A.

Lump alum comes from Cleveland, sizing from Freeman, Ontario; limestone from Stonewall, Manitoba; coloring from Delaware, and lime from Winnipeg.

One of the big features of the plant is the use of the liquid chlorine,. The chlorine is used in the Bellmer bleaching system and is said to be the first system of its kind to be used in the Dominion. The system can bleach sixty tons of pulp daily.

The paper machine is the most modern construction, having the Harland electric drive, with electricty supplied by a Fraser & Chalmers' steam turbine generator. The drive was built in England and the motor supplied by the English Electric Company. The machine is entirely automatic and electrically controlled.

The paper mill was designed by H. S. Taylor Company Limited, Montreal, with H. P. Crowell as resident engineer. The construction of the buildings was done by W. J. Trimble, of Toronto.

Officials of the Company

The officials of the company are:

I. H. Weldon, President.
S. F. Duncan, Secretary-Treasurer.
T. A. Weldon, vice-President.

The men who will have charge of the operation of the local plant are:

A. G. Pounsford, General Manager.
A. G. Hinske, General Superintendent.
L. F. Knickerbocker, Papermill Superintendent.
C. A. Gardner, Woods' Superintendent.
L. Fiess, Assistant Woods' Superintendent.
H. M. Lewis, Engineer.
A. G. Scott, Accountant.
W. Gray, Assistant Accountant.
S. Blucier, Master Mechanic.
D. White, Chief Timekeeper.
W. Morris, Purchasing Agent.
H. Stafford, Chief Electrician.
R. Lyons, Night Superintendent of Pulpmill.
H. Hubert, Night Superintendent of Paper Mill.
J. Campbell, Storekeeper.
C. McLeod, General Woods' Foreman.

SCARCITY OF MATERIALS

New York, Feb. 28, — "Increasing difficulty in securing adequate supplies of raw materials is the feature of the present situation of the paper industry," says the monthly business review of The Paper and Pulp Industry, the bulletin of the American Paper and Pulp Association to its members.

"With a good volume of orders for most grades, there is a growing shortage of all the basic raw materials, from pulp all along the line through waste paper into the supplies of chemicals.

"The Swedish pulp and paper mill strike, which has now become a complete lockout, not only in the paper industry, but also in the great lumber industry, has added to the complications of the situation.

"There is also a stiffening tendency in the domestic labor market, as far as paper is concerned, and several increases have been granted in various mills in the leading paper making districts. The labor situation has not entirely cleared, even with the granting of some increases, running as high as 15 per cent. in some mills.

"With the raw material situation such as it is, there is sufficient evidence that the paper manufacturer will have an uphill fight for many months ahead. The difficulty in securing adequate supplies of the essential raw materials bids fair to increase, rather than decrease. In addition to this phase of the situation in which the paper industry finds itself in the early weeks of the new year, the American manufacturer finds himself facing keen foreign competition."

HOWARD SMITH TALKS ON ANTIPODES

As intimated in our last issue, Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, has returned to Montreal after a four months' trip to the Orient and the Antipodes. Mr. Smith visited Japan, Australia, New Zealand, China, the Philippines, Fiji and Honolulu. The visit was mainly for business purposes, and in that connection he returns with very favorable impressions of the prospects for the extension of Canadian trade in some of the countries he visited. He met with a very cordial reception, especially in Japan, New Zealand and Australia.

In an interview with a representative of the Canadian Pulp and Paper Magazine, Mr. Smith stated: "There is a good business to be done in Japan. The Japanese are extremely friendly to Canadians, and I was most courteously received. I am of the opinion that our business in certain lines of paper can be considerably increased. The Japanese are manufacturing large quantities of paper and this will, no doubt, be increased, but I believe that we can substantially augment our trade with that country. Although China is a vast country with a tremendous population, the consumption of paper is not high; there is business to be done, but its rate of expansion is problematical. Canada cannot do anything in the Philippine Islands by reason of the tariff.

"I was greatly impressed with Australia and its possibilities. It is a fine country, prosperous, and with a great future. Attention is now being given to the growing of cotton, which I am satisfied can be grown to advantage. The only question which is likely to affect the industry is labor. Can cotton be grown profitably with the aid of white labor? As you know, the Australians will not allow black labor, and the point arises as to whether a successful industry can be built up without that labor. I visited all the principal cities except in the West. Sydney Harbor is the finest I have seen, with shipping from all parts of the world. Both Sydney and Melbourne are very fine cities. The people in Australia have great sporting instincts, and sports of all kinds are carried out.

"The policy of Australia is to protect manufacturing to the limit. The people will make everything they possibly can, with a view of encouraging home industries. I believe they will extend their wool growing and will grow more of the primary products. From the railway point of view, the lines are somewhat handicapped, owing to the three gauges in existence, but this will be remedied.

"As regards Canada, personally, I received the greatest courtesy in Australia. No people could be more hospitable than they were. In the matter of trade, Australia gives great Britain a preference which is not enjoyed by Canada. The people are very loyal to great Britain, it is a loyalty more to the Old Country than to the Empire. The ostensible reason for not extending the preference to Canada was that this country was largely built up by American capital, and that a preference to Canada is equivalent to a preference to the United States. This idea has been fostered in the interests of certain British manufacturers, and as an example of this class of propaganda, I might refer to a circular sent to British M.P's by the British Empire Producers, whose chairman, Mr. B. H. Morgan, recently visited Canada. This circular states:

"Canada is being made the venue of branch factories from the United States, and these factories, which are bringing returns to American capital, have the same advantage in regard to the preference as purely Canadian or British-Canadian concerns. The manufacturers of the United Kingdom must have some special consideration. Foreign tariffs are doubled against them, and dumping continues. The Safeguarding of Industries Act might be some defence if it were properly worked, but it is imperative that Government and public body contracts of all kinds should be confined to Empire firms, using Empire materials, and to secure this a substantial margin of preference in tendering should be given in all cases".

Mr. Howard Smith continued: "In my opinion a mistake was made by Canada in giving Great Britain a special preference. In giving a preference we should have made it an Empire preference provided there is an adjustment of the Australian tariff. Canadian manufacturers of paper will have an opportunity to do a large trade with Australia. There are certain lines of our paper which they can buy with considerable advantage. A large amount of Scandinavian paper is being sold in Australia, and the British manufacturers are also making great efforts to secure orders for all classes of paper, the preference of course being a favorable factor. I am of the opinion that there are opportunities for developing general trade between Canada and Australia, but these can only be adequately exploited by solving the tariff problem.

"New Zealand impressed me as a splendid country. There is a great market for Canadian productions, and we can also use more New Zealand and Australian commodities. I beleive that Australia could sell a much larger quantity of her fruits here if the trade were energetically pushed. Our company sends a considerable quantity of paper to New Zealand, and there are prospects of its being increased. Canadian manufacturers are on the same basis as those of Great Britain, as the preference is Empire wide.

"My trip proved a source of great pleasure. I came back with an impression of the unbounded loyalty of New Zealand and Australia to Great Britain, and a confirmed personal attachment to the Empire."

BERTRAMS, 102 YEARS OLD

What a satisfaction it must be to belong to a firm that has a record of more than a century of faithful service. Such is briefly the story of Bertrams Limited (Established 1821), Engineers, St. Catherine's Works, Sciences, Edinburgh, Scotland. The original Mr. Bertram established this concern several years before the first Fourdrinier machine was set up on this continent, so they have been making paper machinery since before the industry on this side entered the modern era.

Bertrams Ltd. are celebrating their Centenary by the publication of the most elaborate catalog of paper making machinery we ever saw, and one of the finest pieces of printing and binding. There are 152 plates illustrating a great variety of equipment.

Our compliments and congratulations to Bertrams Limited; may their second century be more successful than the first.

HOWARD SMITH ANNUAL REPORT IS IMPROVEMENT

The annual report for the Howard Smith Paper Mills, Limited, for 1922, indicates the strong disposition of that industry to come back to its own after the period of deflation had worked its worst. The gross sales show an increase of close to $1,000,000 at $3,908,246 and the earnings amounted to $693,530 a gain of slightly over $80,000 over 1921.

After bond interest and preferred dividends there was a balance of $375,589 available for the common stock representing slightly over 10 per cent. before depreciation or other deductions for reserves and trade mark written off. This compares with 9.70 per cent. on the common in the preceding year.

C. Howard Smith, the president, in his report to the shareholders reports that sales for the year amounting to $3,908,246 being an increase of $999,702 over the previous year. The net earnings on the year's business, as shown by the statements, amounted to $693,540. After providing for bond interest and preferred stock dividends, there remains a balance of $447,298.23 available for distribution. From this, dividends at the rate of 6 per cent. per annum have been declared. The Company is in a strong liquid position, and the ratio of assets to the funded debt is most satisfactory.

The plants have all been maintained at the highest point of efficiency. The electrolytic bleach plant at Cornwall, has been completed, and has been in operation since last July, producing all the bleach used in the pulp mill. The groundwood plant at Crabtree Mills was also completed. On account of the heavy demand for grades of paper, in which this product is used, it has been found necessary to add another grinder. This is expected to have in operation very shortly.

The directors decided that it would be advisable to start operations on the Gaspe limits and get out at least a portion of the pulpwood for the company's requirements for 1923. This work is being proceeded with, and to handle the season's cut, the saw mill and barking plant at Sandy Beach, Gaspe, have been thoroughly overhauled.

A marked improvement in the export business, repeat orders are continually being received, and the product and handling of some favorably commented upon.

The substantial balance after the provision for dividends on both preferred and common stocks, added to the balance from the previous year enabled the management to make provision for various reserves and the reduction of trade mark and registered brand accounts and cary forward $16,065 to profit and loss account.

WILLIAM SCOTT

We regret to report the death of Mr. William Scott, J.P., M.E., I.C., Vice-President and General Manager of the Anglo Newfoundland Development Co. Ltd., Grand Falls, Nfd. Mr. Scott had been in poor health for nearly three years and at the time of his death was spending the winter at Southsea, England. He was a civil engineer and in that capacity was engaged quite extensively on railroad construction in Canada and Newfoundland. From 1905 to 1914 he was Chief Engineer on the development of the hydro-electric plant and construction of the huge paper mill of the Anglo Newfoundland Development Co. Ltd., at Grand Falls, Nfd., in 1914 he was appointed General Manager, and later Vice-President of the Company.

CONTRACT FOR KENOGAMI DAM AWARDED

The contract for the damming of the Chicoutimi and Sable Rivers in Kenogami, Lake St. John, was awarded last week to the Nova Scotia Construction Company, of Montreal and Halifax, at $985,000. This tender was the lowest one received by the Running Streams Commission.

The enterprise represented by the dam, is the most considerable one of its kind undertaken since the building of the Gouin Dam under the control of the Government and its realization will mean the all the year round operation of the Price Bros. and Chicoutimi Pulp and Paper Company and subsidiaries in the Lake St. John district. With huge contracts on hand for several years those lumber interests were being greatly handicapped in the winter months or during periods of drought through the difficulty in operating their mills. In winter the ice would interfere with the installation and reduce the water available, while in the fall, unless the rains had been sufficiently heavy the water supply was inadequate for the needs of the mills.

In addition to this the population in those districts were suffering from the instability of work. There is a population of over 15,000 working men in the Lake St. John and Chicoutimi district, who depend upon the activity in the pulp and lumber industry.

A few months ago the Provincial Government and the two principal firms interested in the waters of the Chicoutimi and Sable Rivers got into conference on the matter and within a few months the arrangements were completed. Nothwithstanding the fact that the Grande Decharge Barrage, (which is to cost $30,000,000 when completed) was being built in that region, the Government, after obtaining sufficient guarantees, asked the Running Streams Commission to prepare plans and estimates for the Kenogami dam enterprise. A few weeks ago tenders were sought and the various prices submitted show that the work was possible at even a lower cost than was originally expected.

Eight tenders were submitted to the Running Streams Commission and three of them, the lowest three were taken into consideration by the Provincial Cabinet which held six sittings to adjudicate upon the matter. Finally on March 1 an order in council was passed by the Cabinet awarding the contract to the Nova Scotia Construction Co. and Sir Charles Fitzpatrick, Lieutenant Governor of the Province signed it.

According to the terms of the contract the work must be completed on the 1st of November 1924. However, on recommendation of the engineers, it was decided that in the spring of 1924 the reservoir must be advanced sufficiently to reach cut 108 out of a total elevation set at 115. This has been added in the contract so as to allow the storing of the waters of the spring of 1924 in order to be ready for use in the fall of that same year and during the winter of 1924-25. Had this specification not been added the reservoir 1925 and the winter of 1926, because water of the would have been of hardly any use before the fall of spring 1925 would have been the first to be stored.

ABSTRACT BULLETIN WANTED

The Editor has requests for copies of the Technical Section Abstract Bulletin, pages 33-40, 1921. If any readers have copies they are worth 25 cents each. Please mail to Pulp and Paper Magazine.

PULP AND PAPER NEWS

The Laurentide Company, Limited, have purchased the St. Casimir, P. Q., plant of M. A. Grandbois, who operated timber limits and mills in the Abitibi during the present season.

H. S. Taylor, Limited, engineers, Montreal, have obtained an order to rebuild the board mill of the Southern Novelty Company, Hartsville, South Carolina.

The lumber trade in Eastern Canada is very buoyant. Business is quite brisk, and prices are moving upwards. This is due to heavy orders, especially for American account, combined with a scarcity of dry stock. Firms have many orders which they cannot fill. Spruce is very firm, and hardwoods have taken quite a jump. The anticipated heavy cut in the Maritime Provinces will fall short of expectations, consequent on abnormal snowstorms making it impossible to get out the logs. In the West the mills are full up with export orders, with the result that prices have been further advanced.

Price Bros. and the Chicoutimi Pulp and Paper will benefit from the damming of the Chicoutimi & Sable Rivers, a contract for this work having been let by the Quebec Government last week to the Nova Scotia Construction Co.

Mr. F. A. Sabbaton and Mr. George Chahoon, Jr., last week visited the plant of the Dryden Paper Company, Ont. Mr. Sabbaton has been elected vice-president and managing director of the company and Mr. Chahoon a director.

Considerable expansion of the Ontario Government's reforestation nurseries was forcast in the Ontario Legislature last week by Hon. Beniah Bowman, Minister of Lands and Forests. During debate on the second reading of a bill to empower his department to expropriate lands for nursery or reforestation purposes the Minister stated that the capacity of the Norfolk nurseries had been doubled four times during the last year and that it was the intention of the Government to go ahead on a very large scale. The bill secured second reading without division.

William Chew, one of Midland's most respected citizens, and for many years engaged in the lumber and pulp wood industry in that town, died in Toronto on Feb. 18 after a brief illness. The late Mr. Chew was born in York County in 1847 and went to Midland about fifty years ago, he being one of the family of brothers who were so largely and so closely identified with Midland's pioneer industry, that of lumber and pulpwood. A widow and one daughter survive.

There was offered on the Toronto market last week a $395,000 issue of 6 per cent Provincial Paper Mills bonds due May 1, 1940. At the sale price of 99, the return to the investor is 6.10 per cent. The bonds are payable in Toronto, New York and Montreal. Last year the Provincial Paper Mills Limited, sold $600,000 in bonds, the proceeds of which were used in connection with the new Port Arthur plant. As the expense incurred in construction exceeded the $600,000 raised, the balance was met out of earnings. The company proposes to replenish working capital by the proceeds of the present issue, which was all taken up shortly after being put on the market.

The many friends in the paper trade of H. F. E. Kent, President of the Canadian Paper Trade Association, will regret to learn that he is ill at his home in Toronto.

George Winlow, of the Lincoln Paper Mills, Limited, Toronto, spent some days last week in Montreal on business.

Edward F. Farley, chairman of the Executive Committee of the Lincoln Paper Mills, Limited, Merritton, Ont., and also President of Edward P. Farley & Co., Chicago, was a caller on the paper trade in Toronto last week.

The Barber-Ellis Company, Limited, manufacturers of envelopes, etc., held their annual meeting at the head office of the company on Adelaide Street, Toronto, on Feb. 16th when the annual statement for 1922 showed a satisfactory increase in business over that of 1921. Although sales were just about the same as the previous year, it was satisfactory to note that bad debts were considerably less, while the outlook for the present year in the envelope business was pronounced as particularly bright. John E. Ellis was re-elected President: F. M. Ellis Vice-President and S. Holt, Secretary-Treasurer. All of the directors were re-elected Representatives from the company's branches in Winnipeg, Vancouver and other Western points attended the meeting.

Ritchie & Ramsay, Limited, who have had their executive and sales offices in the Empire Building on Wellington Street, Toronto, have moved into new quarters in the General Assurance Building at 357 Bay Street, room 800.

The sympathy of many in the paper trade in Toronto was extended to Major J. R. Bell, of Business Systems and an official of the Purchasing Agents Association of Canada, in the death of his father, Rev. J. W. Bell, which took place in Toronto last week.

The many friends in the Toronto paper trade of V. T. Haney, Toronto representative of the Rolland Paper Company, Bank of Hamilton Building, will be pleased to learn that he is progressing favorably in hospital following an operation, although it will be perhaps several weeks before he will be able to resume duty.

F. H. Anson, President of the Abitibi Power and Paper Company, who was in Toronto last week, stated that if some arrangement was not come too soon with the Ontario Government for the development of more power, it might be necessary to close down the mill partially and run on part time.

I. H. Weldon, President, and S. F. Duncan, Secretary, of the Provincial Paper Mills, Limited, left Toronto last week for Port Arthur to be present at the starting of the new book paper machine in the new mill. It is expected that the machine will be running before the close of the present week and actively turning out paper.

John Martin, of the John Martin Paper Company of Winnipeg, who has been spending some time in Toronto in connection with the taking over of the Buntin, Reid Company's paper business, has returned to Winnipeg.

With power to carry on business as manufacturers and dealers in cardboard, paper and other similar materials, Greenways, Limited, with headquarters at Windsor, and an authorized capital of $20,000, has been granted Ontario incorporation. The provisional directors are . E. Greenway, K. C. Greene and E. M. Woodward, all of London, Ont.

A charter just granted to Trafalgar Lumber, Limited, of Oakville, Ont., authorizes the company to manufacture and deal in lumber and pulpwood. The authorized capital is $100,000.

W. N. Hurlburt, Assistant to the President of the George H. Mead Company, Dayton, Ohio, was a caller at the office of the Spanish River Pulp and Paper Mills in Toronto last week.

The head office of the Fort William Paper Company, Limited, Toronto, report that the second newsprint machine in their new plant at Fort William is substantially erected now and that about the middle of March should see it in operation. No. 1 machine is working satisfactorily.

At a meeting of the directors of the Ontario Pulp and Paper Makers Safety Association in Toronto on Feb. 27th preliminary steps were taken to co-operate in a proposed safety week covering the whole of Ontario. Secretary-Engineer A. P. Costigane was authorized to take any steps necessary in co-operation with other safety organizations to carry the project through. This safety week will cover all phases of accident prevention including safety in the homes, in the streets, and highways, at the schools and in the industries.

Port Arthur papers to hand give considerable space to what is described as a unique and brilliant social event in that city on the evening of Feb. 17 when, to mark the opening of the new book paper mill, the Provincial Paper Mills, Limited, were hosts at a ball in the new building, at which many municipal officials and others from both Port Arthur and Fort William, together with railway officials and many other guests were present. The 20,000 square feet of floor space was thronged with dancers, the guests being received by Mr. and Mrs. Pounsford, on behalf of the company. The event proved a thoroughly enjoyable one for the several hundred guests present and President Weldon was heard to remark afterwards that if by any chance the company failed to make paper at the mill it would be devoted to social purposes. As the mighty paper machine is to be started this month there is little hope of the social aspiration of a lot of young people in Port Arthur being gratified in this respect. The officers of the company largely responsible for the affair were: A. G. Ponunsford, General Manager; L. F. Knickerbocker, Superintendent of the Pulp Mill: A. G. Hinzke, Superintendent of the Paper Mill: H. P. Crowell, Consulting Engineer: H. M. Lewis, Engineer: W. Morris, Purchasing Agent: C. A. Gardner, Woods Superintendent: A. G. Scott, Accountant and W. Gray, Assistant Accountant.

The International Paper Company are interested in the power development at Gres Falls, Three Rivers, which is now being carried out by the St. Maurice Power Company, a subsidiary of the Shawinigan Company. The International Paper Company are owners of La Gabelle Forges Rapids, which form part of the development.

Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, has returned to Montreal from his extended business visit to China, Japan and Australia.

Business is surely good with the Engineering and Machine Works of Canada. Their shops are running every minute and will soon be obliged to operate both night and days shifts.

Mr. J. N. Stephenson, editor of the "Pulp and Paper Magazine of Canada" has just completed a series of four lectures on Pulp and Paper Manufacture to the senior students in chemical engineering at McGill University. These lectures were fully illustrated with lantern slides, and covered the extent of the industry and the manufacture of the principal grades of pulp and paper. The last period was spent in a visit to the Forest Products Laboratories of Canada, where the students inspected the extensive exhibits of pulp and paper products and saw the experimental paper machine in operation. The staff, of the Laboratories, very kindly assisted in explaining the various points of interest.

There is much sickness, principally of a form similar to the "Flu" though not as serious, among the mills of Northern Ontario. In one case out of a night shift of thirty five in a paper machine room, only seventeen men punched in.

The settled dry weather throughout the winter has led to considerable inconvenience and some pential shut downs among the northern mills, due to low water in the streams.

Mr George McAvity was recently elected a director of the Eastern Trust Co. Mr. McAvity is president of T. McAvity & Sons, St. John, the Inglewood Pulp and Paper Company and the Maritime Manufacturing Corporation. He is a director of the Telegraph Publishing Company, the Canadian Buffalo Forge Company and the Standard Clay Products Company.

JAPS REACH OUT FOR WORLD TRADE

Japan is rapidly forging ahead in her industrial life, according to C. Howard Smith, vice-president of the Canadian Manufacturers' Association who has just returned from a tour of the east and the Antipodes. Not only is she building factories on a colossal scale but her industrial leaders are reaching into the markets of the world, anxious to obtain trade that will benefit the people at large, Mr. Smith declared.

Questioned on the so-called yellow peril, he dismissed it briefly, saying the people of the east are too busy with their own affairs to bother about trespassing in other fields.

Mr. Smith believes there is a great opportunity for Canadian producers in the east as the tremendous population is, to a large extent, depending on outside sources for their requirements.

PULP MILLS AT KENORA START RUNNING

On February 23rd, the first eighty ton unit of the new Backus Brooks Company's pulp mill started operations in Kenora. One side of the plant was started and is running nicely. This is now being tried out, and in the meantime the other side is being rapidly connected up. The plant is so designed that either half can be run independently of the other, so that in case of accidents or wear when repairs are required, production may be continuous. It is expected that in a few days both sides will be in full operation. This is the beginning of production which it is confidently stated will ultimately be a thousand tons per day. This, of course, will take time to develop. —Kenora Examiner.

UNITED STATES NOTES

A plan to enlist engineers throughout the United States in a reforestation movement in cooperation with the Government will be considered at a meeting of the executive board of the American Engineering Council, an organ of the Federated American Engineering Societies, in Cincinnati on March 23 and 24. The conference will be attended by representatives of thirty national and local engineering societies.

A stubborn fire which burned out the interior of a five-story building on Pearl Street, last week threatened the heart of the paper and chemical district of lower New York City. The building and contents at No. 319 Pearl Street, occupied by the Andrew Ragone Company, a paper mill supply corporation, were destroyed. Two firemen were slightly injured, traffic on two elevated railways was stopped for a time and lower New York was enveloped in smoke so thick that in the vicinity of the fire it seemed night. The damage will amount to more than $50,000.

The following day a fire in the garage and storehouse of the "Brooklyn Daily Eagle," destroyed a delivery truck and 200 rolls of print paper, causing a loss estimated at several thousand dollars.

According to "Science and Invention," chemists have evolved a paper that is transparent, without taste, odor or greasiness. Numerous processes have been tried in an effort to achieve this result, notable among these processes being the use of fats, oils, resina, gums and other similar compounds. Transparent paper is in much demand among bakers and candy manufacturers, but the difficulty with nearly all so-called transparent products was the greasiness brought about by the fats or cil used in their manufacture. The new product is sold in various grades of hardness, thickness and other physical properties. It is made as thin as ordinary tissue paper, and is not so readily combustible as celluloid. The heavier grades are absolutely non-inflammable.

A membership on the National Thrift Committee has been assigned to the American Paper and Pulp Association in recognition of the manner in which the industry as a whole endeavors to aid its employees to improve their financial condition. Judson G. Rosebush has been invited by Adolph Lewisohn of the Patten Paper Company, Ltd. of Appleton, Wis., to be the personal representative of the industry on the committee.

An order for 55,000 trees has been placed by the New York State Forestry Association with the New York Conservation Commission to cover reforestation work on the watersheds and park areas of several cities, including New York. Forests will be planted this spring by a number of cities under the auspices of the Association.

The Joint Congressional Committee on Printing has appointed the Paper Specifications Committee to draw up specifications for next year for the Government Printing Office. The same committee will act that acted this year and it is required by the Joint Committee's resolution to report on or before December 9. The appointment of the committee was made necessary at this time because Congress will be adjourned until next December.

Forestry and lumbering in Sweden formed the topic of an interesting lecture recently given before the American Society of Mechanical Engineers in the Engineering Societies Building, New York, by Dr. Harry von Eckermann. The talk was illustrated by a series of lantern slides and motion picture films.

The Central Paper Company, Muskegon, Mich., is erecting six new structures to expand its present plant, increasing its daily capacity from about 60 to 120 tons.

The Ford Motor Company's board mill at River Rouge, which began operations about a year ago, is planning to install a wood cooking process which will materially increase production.

Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Company, had as his guest recently Hugo Hartig, Germany's largest pulp exporter.

Thomas Fay, a beater room employee at the Kalamazoo Vegetable Parchment Company's mill, has asked to have his company life insurance policy for $500 made payable to the benefit of the K. V. P. Sick Benefit Association. Fay's request was made because of his firm belief in the principles and workings of the association. His wish has been granted and action taken in accordance. The K. V. P. Company insures all its employees who have been with the concern over six months. The policies start at $500 and increase in value to $1,000.

The Kimberley-Clark Company has made an appropriation of $30,000 to apply to the erection of the first unit of a community club house at its Kimberley mill. Work on the structure will be started as soon as weather conditions permit.

The Diamond Paper Company, Philadelphia, is planning to take over a larger home at the end of the present year. When its new property is acquired the firm purposes to expand its business and to carry a larger stock of coarse papers, corrugated products, cardboard and other paper specialties. It was established four years ago by the present owners, Israel Dukes, B. M. Zieve and Jules Agillis.

The twenty-first graduating class of the Yale School of Forestry held its closing exercises last Saturday. Sixteen of the eighteen of the class will go to Urania, La., to study in the pine forests near that place for the remainder of the school year.

AGENTS FOR THE ORIENT

Mitsui & Company have just been appointed exclusive representatives in Japan and China for Uehling CO_2 Recording Equipment and other Uehling power plant instruments and gauge. The head office of Mitsui & Company is located in Tokio and their New York branch office is at 65 Broadway. The main office and factory of Uehling instrument Company is in Paterson, New Jersey. Many Uehling installations have been made in Japan and China without the aid of local representatives but it is believed that with the cooperation of the very able engineering department of Mitsui & Co. the Japanese and Chinese Uehling will be served to the very best advantage.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, March 6. — Paper business, according to the jobbers, is on the slow side. There is a lack of vitality, which it is difficult to account for, having regard to the general state of trade. Some firms did fairly well in February, but speaking generally the volume of orders did not show up well. The printers are far from busy, and this explains a part of the slackness; it does not, however, tell the whole story.

The mills report a steady amount of business; some mills indeed are quite busy, so that although the local trade may be quiet, it is apparent that the paper industry as a whole, is in good shape. Higher prices in the cheaper qualities of the finer grades may soon be looked for. The advance will be based on the rising cost of raw materials and on the various supplies which the mills will endeavor, in part at any rate, to pass on to the consumer. Indications point to still higher costs of the various commodities which enter into paper making.

The imports of paper into Canada in January totalled $611,241 as compared with $542,499 in the corresponding month of 1922. The chief gains were in book and printings, wrappings, wall papers and hemp papers, while boxes also substantially increased. The Province of Ontario bought largely of book and printing papers.

The call for newsprint is slightly less, but it still remains exceptionally strong. The new tonnage of the St. Lawrence Paper Mills is now on the market. There is a possibility of labor trouble at some of the mills, as it understood that the Unions favor a demand for higher wages. But such a demand does not mean that it will be granted, nor does it mean any break in production while the matter is under adjustment. The mills are already facing increased cost in other directions, and will not look with favor on further outlays.

There is a sustained call for toilets and tissues, while book, bonds and ledgers are in fair request. Wrappings are in steady demand and orders for boards show no sign of falling off. Paper stock is firm, while roofing felts are in good demand.

In pulps, groundwood is inclined to go back a little, with a considerable number of inquiries to hand. The low water has resulted in the closing down of a number of grinders. Water seems to be low in many parts of Eastern Canada, and is affecting many industries. Bleached sulphite is firm, the orders coming along at a very steady rate.

Apart from the pulpwood cut by pulp and paper companies, the amount of wood cut this season will not be very large. Dealers state that many operators ceased quite early in the season. The amount from the Abitibi district will be negligible.

Toronto Market News

Satisfactory activity is being shown in most branches of the pulp and paper industry in Ontario, although there was a falling off in business by paper merchants in Toronto during February. The situation generally, however, appears to give promise of a recurrence of good business during the coming spring months and it is the testimony of both manufacturers and distributors that there is a stronger undertone than is usual at this time of the year. Demand for most paper lines, with the exception of a slight falling off during February, is keeping up well, and it is believed that March will see the jobbers calling on the mills for liberal supplies of all paper lines. Mills in the Ontario district report business as quite good and despite a quiet month among the jobbers there has been no reduction in the output of the various plants. In many instances the spring will see mill operations increased and within the next two or three weeks two new Ontario mills — the new book paper mill of the Provincial Paper Company, Limited, at Port Arthur, and the newsprint mill of the Spanish River Pulp and Paper Mills, Limited, at Fort William — will be in operation.

PULP. — Ground wood pulp is holding fairly firm again, the price at the mill being $46, although some has been bought for a little less. It is stated that many of the newsprint mills which frequently have a surplus of ground wood to place on the market have not got it today and although there is apparently no scarcity there is a sufficient hint of it to keep the market firm. A fair demand exists for other lines of pulp. Natural sulphite is quoted at $70 delivered and bleached at from $90 to $100, with news grade at $55 to $57. The pulp situation from the standpoint of the mills marketing it is considered generally satisfactory.

PULP WOOD. — Contractors are still shipping on their old contracts and those in the business in Toronto report that the paper mills are consuming lots of wood, the market generally being in a healthy state. Mills are paying from $12 to $15 at the mills for peeled spruce although the great bulk of what is coming out is on last year's contracts. Peeling on the new wood will start in May and contractors do not care to hazard a prediction as to what the new price will be, although they are inclined to think that prices will hold fairly firm for next winter.

STATIONERY. — Manufacturing stationers in Toronto are using considerable supplies of paper and report business as good. Preparations are now being made for the display of papeteries for next Christmas business and salesmen will soon be on the road with samples. Returns just compiled by one big Toronto stationery manufacturing house from forms filled in by travellers from coast to coast indicate that while last year was a good one for the papeterie business, the outlook for the coming season is even better. Greeting card, blank book and other departments of the stationery trade are enjoying a fair amount of business.

BOOK PAPERS. — All book paper mills are busy and there has been no diminution in production. Most mills are booked ahead for several weeks and the general outlook for good spring business in this line is good.

WRAPPING PAPERS. — With some of the mills closed down owing to adverse water conditions production of wrapping paper and paper bags fell off somewhat during February. The month was a rather quiet one for the distributor but at the close of February there were signs that sales were settling back to their old stride. Jobbers are looking forward to a good spring.

COATED PAPER. — Manufacturers of coated paper report a fair demand for their product with the mills running practically at capacity. There have been no changes in prices of late but the tendency is upward and there has been talk for some time of increasing some lines. Raw material is still very high, casein being quoted at from 25c to 30c per lb. and glue at 16c per lb.

TISSUES AND TOILETS. — Manufacturers of these lines, and of all light weight papers, report a steady demand, with prices generally firm. Mills are being operated at capacity.

NEW YORK MARKETS

New York, March 3 — (Special Correspondence) — Activity in the paper market continues of fair breadth. Most kinds of paper are meeting with a splendid demand and are moving into consuming channels in gradually increasing volume; prices are firm, and in a majority of cases tend higher; the situation as a whole is marked by a very healthy tone, with prospects pointing to further business expansion.

After having displayed an easing position for several weeks, the box board market is steadier. In fact, there is every likelihood of an advance in quotations since manufacturers in general several days ago withdrew prices until next Monday and indicated that when they again quote they will name higher quotations. Plain chip board worked down to as low as $55 per ton f.o.b. New York early this week. Further declines in waste paper and limited demand from paper box manufacturers for board made for a soft price situation, and at least certain mills in the East sold chip board at $55 a ton. This low price; that is, low in comparison with prices ruling in the recent past, apparently attracted a good many buyers into the market, and it is understood that those mills naming this figure secured a sufficient tonnage of orders to keep them busy for a while and therefore withdrew quotations. The probabilities are that when new quotations are issued on Monday next either $57.70 or $60 a ton will be named on plain chip board. News board is quoted at a differential of $3 to $5 per ton above chip, with most manufacturers at present quoting $60 f.o.b. New York, and some mills are asking beyond this figure owing to raw material for this kind of board being relatively scarcer and costlier than that for chip board.

The Federal Trade Commission's report on the print paper industry for January shows that print paper production was resumed on a full capacity scale during the first month of the new year following some drop in manufacturing operations in December, probably occasioned by celebration of the holidays. Production of total newsprint in the United States in January amounted to 127,452 net tons, compared with 119,404 net tons in the preceding month, 105,808 tons, in January last year, 123,830 tons in January two years ago, 129,663 tons in January three years ago, 116,154 tons in January four years ago, and 105,700 tons in January five years gao. A total of 73 mills reported to the Commission in January.

HANS LAGERLOEF, President and Treasurer
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AND

Finnish Wood Pulp Union
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The foregoing figures show that newsprint production in January was close to the record level, the highest point of output ever reached by domestic mills being only several thousand tons above the production in January. Of the 127,452 net tons of total newsprint produced in January, 117,497 net tons were standard news, which production compares with 110,803 tons of standard news produced in December, 98,702 tons in January last year, 113,764 tons in January, 1921; 114,957 tons in January, 1920; 106,002 tons in January, 1919, and 97,086 tons in January, 1918. The January, 1923, production of total newsprint was 10 per cent. in excess of the average output of domestic mills over the last five years, and that of standard news was 11 per cent above an average. Mill stocks of print paper increased during last January from 19,208 net tons of total newsprint and 15,128 tons of standard news at the beginning of the month to 23,004 tons and 18,457 tons, respectively, at the end of the month.

Newsprint continues in a very firm market position. The movement of supplies into consuming channels is keeping up at a steady pace and publishers in frequent instances are looking to augment their stocks. Issues of New York newspapers seem to be growing all the time, which is not an uncommon situation with the spring approaching and the pre-Easter shopping season almost here, occasioning heavy advertising by department stores and other merchants. Prices are strong, and it is no secret that buyers are paying premiums in some cases to get spot deliveries.

Book papers exhibit a stiffening price tendency. Most manufacturers advanced prices of book paper about three weeks ago, and the only effect on the demand for No. 1 grades is gradually increasing as the with business, both from contract and transient customers, and are operating at close to maximum capacity.

Coarse papers are quotably firm and are meeting with a ready sale. Kraft and manila wrappings are moving in good volume, and a majority of manufacturers are sold well ahead. Tissues are firm, and demand for No. 1 grades is gradually increasing as the Easter season draws nearer. Coarse tissues also are in active call and priced at firm levels.

GROUND WOOD. — There is a lack of feature in the mechanical pulp market. Supplies are moving into consuming channels in a fairly steady way and prices remain at previous levels, with the tone apparently a little firmer than it was. While it is generally conceded that mill stocks of mechanical pulp are substantially below normal, it is also admitted that available supplies are proving ample at present to cover the requirements of consumers. Indications are that consumption is running a close race with production, at times probably exceeding the output slightly, but buyers evidently are not worried over the situation and are proceeding along conservative lines in acquiring the pulp needed.

Domestic grinders continue to quote around $43 a ton for prime spruce ground wood for prompt shipment, with prices ranging several dollars a ton on both sides of this figure, depending on the haul from the manufacturing to the consuming point, the tonnage involved and the quality of the pulp. Canadian grinders are reported quoting from $40 upwards f.o.b. producing plants, and some imported ground wood

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

of Scandinavian origin is offered at around $45 per ton ex-dock New York.

CHEMICAL PULP. — There were rumors afloat this week that the lockout of Swedish pulp mill workers had been terminated. No confirmation of this was secured, however; in fact, the rumors were definitely denied by those in a position to know. Advices were received stating that efforts were being pushed in Sweden for settling the labor difficulty. March 15 has been set as the date for an arbitration meeting of pulp manufacturers and representatives of their employees, and it is hoped something of a conclusive nature will result.

The situation in chemical pulp is devoid of important change. Demand is fair. Paper manufacturers are purchasing pulp when needing it but cannot be induced to place orders unless actually and immediately in want of supplies, with the result demand is quite spasmodic, and, taken as a whole, lacks the volume of busier periods through which the market has passed. Prices are quotably maintained and there is an upward tendency noted. In fact, importers are growing more bullish every day, regarding foreign pulps and are marking up quotations. A prime grade of No. 1 unbleached sulphite of foreign origin is said to be unobtainable now at less than 3.10 to 3.15 cents per pound ex dock New York, and Scandinavian kraft is held at higher than 3 cents per pound in most cases. Bleached sulphite is moving along at an even pace with no change reported in quoted prices.

RAGS. — The predictions of many dealers that low grades of papermaking rags, especially those used by felt paper mills, were going higher in price, are being realized. Roofing stock jumped another peg in price this week. Sales of No. 1 packing were reported at 1.65 cents a pound f.o.b. New York and higher, and No. 2 roofing stock brought 1.50 cents. There was a run of demand for the No. 1 grade during the week, which forced prices up a little beyond a relative level with No. 2 stock.

The other feature in papermaking rags is the strong demand for and advancing position of No. 1 white shirt cuttings. These rags are held by graders at 14 cents per pound at shipping points, this being about the minimum figure asked, with some sellers asking a half to a cent per pound higher. All other new cuttings are firm and are moving in good amounts to paper mills. Old thirds and blues exhibit a stiffening tendency, due in part to the rising position of roofing stock, and dealers ask around 2.35 cents a pound for repacked and 2 cents for rough packing at shipping points. New washables have advanced, dealers quoting 5.25 cents to a quarter of a cent higher for No. 1 packing.

PAPER STOCK. — The market for waste paper has developed a little steadier tone after having receded to new low levels for the present movement early this week. Prices of folded news gradually worked downward until they reached 1.40 cents a pound f.o.b. New York, No. 1 mixed paper went off to 1.10 cents New York, and dump mixed to 80 cents a hundred pounds, and these prices still represent market levels though there is a firmer undertone now apparent. There has been a fairly good demand from mills; however, consumers have insisted on getting supplies within certain price limits and have in frequent cases refused to buy excepting at the prices bid. This policy on the part of buyers ultimately compelled sellers to bring prices down to where business could be consummated.

Books and magazines have receded slightly in price to about 2.40 cents a pound for No. 1 heavy books f.o.b. New York. Shavings are steady at 4.25 cents for No. 1 hard white, and 3.60 cents for No. 1 soft white, and old kraft paper is selling at 2.25 cents New York.

OLD ROPE AND BAGGING. — Old manila rope continues in a strong market position, demand being active and fully broad enough to remove practically all the supply of rope on offer. Paper mills are paying 6.75 to 7 cents per pound at dealers' shipping points for No. 1 domestic manila rope, and foreign rope is fetching a quarter to a half cent less than domestic. Trade activity in old bagging is limited, with gunny leading the way. Consumers quote around 1.50 cents a pound at shipping points for No. 1 domestic gunny, 1.20 cents for No. 1 scrap burlap bagging, and 95 cents a hundred pounds for roofing bagging.

A NEW PUMP

An interesting duplex, end outside packed plunger pump was recently designed by The Smart-Turner Machine Co., Ltd., Hamilton, Ont. The conditions under which the pump was required to operate were rather extraordinary in that the water contained an acid which destroys cast iron. It was therefore deemed advisable to make the water end, as far as possible, of individual pieces, so that any part could be replaced at small expense.

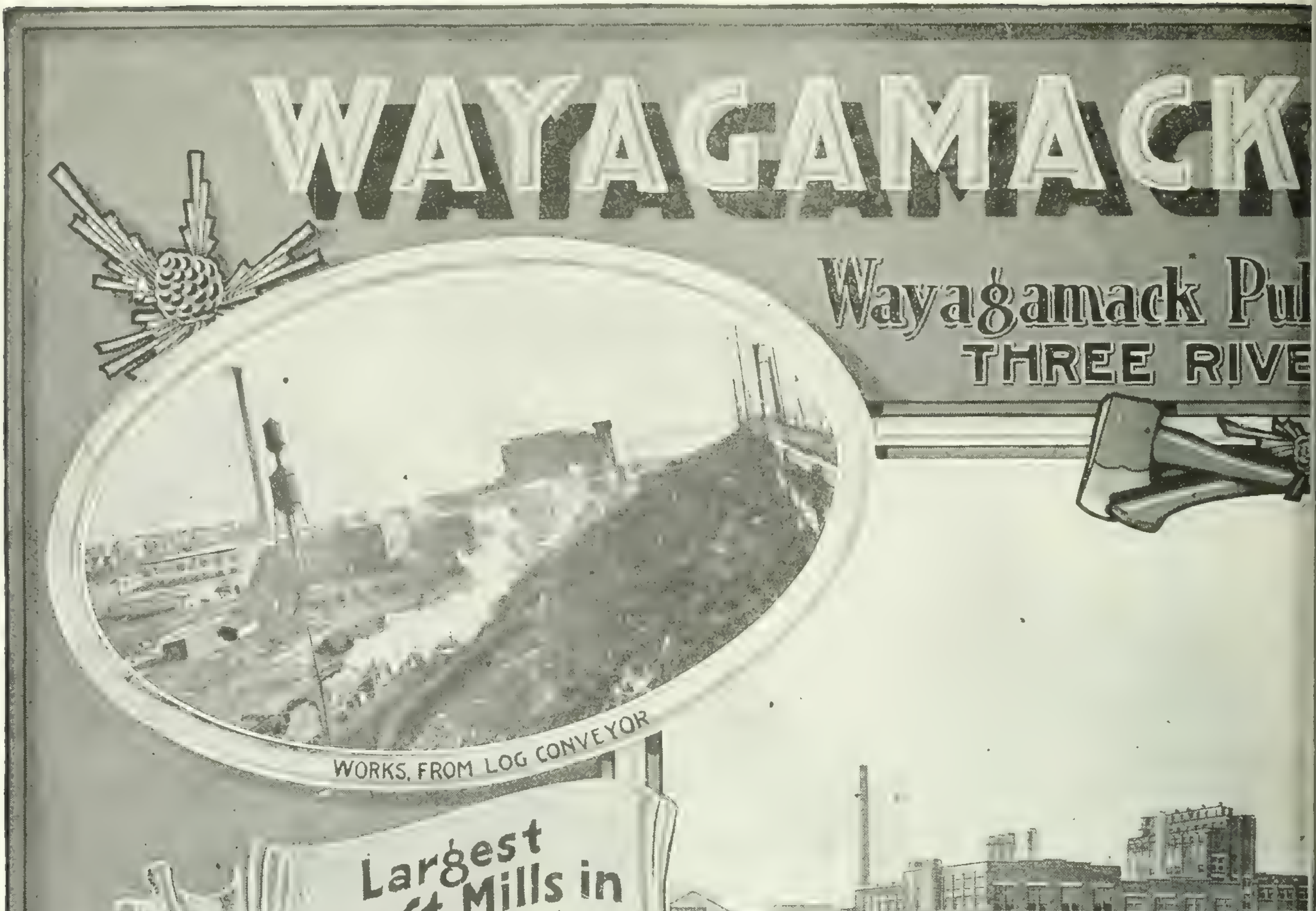
The steam pistons are 18½" diameter, and the water plungers 11" diameter, all 15" stroke. The plungers are of solid brass, and outside packed. The valve chambers are cast iron pots, having the valves and valve seats so arranged that they can be removed intact. The illustrations shows one of these valves complete. It consists of a brass seat which is held in the valve pot by a stud with lock nut, through each valve pot cover. The valves are brass balls, each one being held in place by the cage. The effect of the ball valves is rather unique when the pump is in operation, as they do not all seat together, with the result that it gives a wonderfully easy running pump, with a very interesting clicking noise as the valves seat, something the same as that produced by a telegraph instrument, but very faint.

The Multiplate Seated Valve

RETIREMENT OF J. E. A. DUBUC RUMORED

It is rumored that Mr. J. E. A. Dubuc, who has for the past twenty years been actively associated with the pulp and paper industry in Canada, has found it necessary, on account of ill-health to relinquish a number of the responsibilities with which he has been so long identified.

It is understood that Mr. Dubuc will shortly be leaving Canada for an extended holiday in Southern France.



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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI GARDENVALE, QUE., March 15, 1923 No. 11

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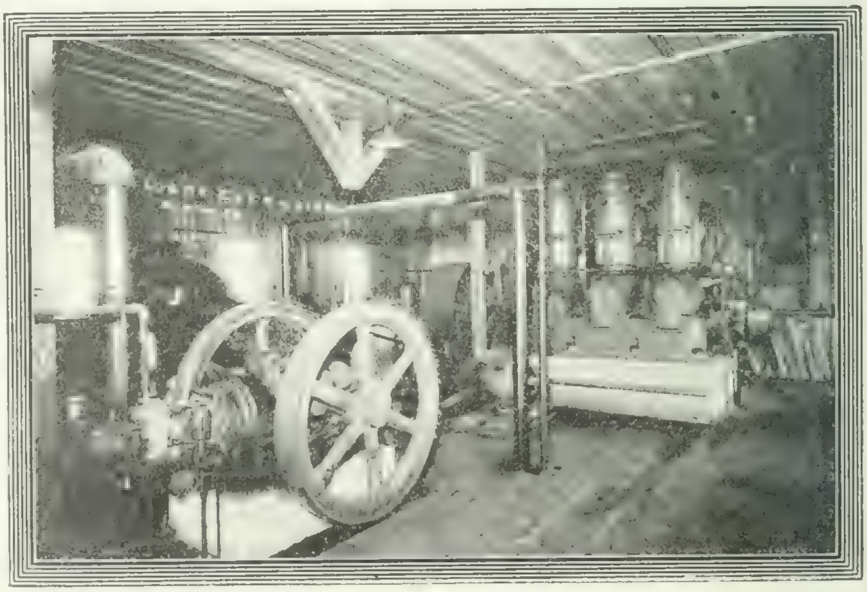

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EDITORIAL

WAGES AND PRICES

In the financial columns of some of our news papers, there has lately been considerable comment as to the possibility of an increase in the price of certain papers. It is even hinted that an increase is a probability, especially in the case of newsprint. The principal reason or basis for such an idea seems to be that, at the present time, spot lots of newsprint are occasionally commanding $80 per ton, or $5 above the current contract price, and the other factor, which is frequently mentioned is, that raw materials are higher in price than they were when contracts were made. As the situation appears to us, we should consider any change in price, at the present time, as distinctly inadvisable. It may be that there is a sound basis for such comments as have appeared, but it seems more likely that they emanate from a desire to show the soundness of investment in pulp and paper companies' stocks.

It is probable that there has never been a time, at least within the memory of most of us, when the relations between the newsprint manufacturers and the publishers were so amicable as at the present time. This feeling was well expressed at the annual meeting of the Canadian Pulp and Paper Association, by Mr. S. E. Thomason, vice-president of the Chicago Tribune, when he said, "in any event, we have given up the idea of trying to put each other in jail, and within the past year, we witnessed the rather unusual spectacle of price reduction in contract periods with firming markets on your part, and consent to price increases in contract periods on ours." It is true that advertising volume has increased somewhat during the past year, and that consumption of newsprint has increased, corresponding to greater volume of advertising and to larger circulation. It is true also that principally because of increases in these two directions, the paper mills of the United States and Canada have been kept at a very satisfactory degree of employment. A number of new mills, and new machines in old mills have come into the market, and yet production has been maintained at a very satisfactory rate and stocks of paper on hand have remained quite close to the normal average. Looking at it from the financial side, we find that the latest annual reports of the majority of our companies show an improvement over last year's reports, and a fairly satisfactory situation. In fact, the industry seems to have gotten pretty well back on its feet, after the very serious depression of 1921.

From governments and other sources, reports indicate that the cost of living is pretty well stabilized, which would indicate that wages and prices, taking it all round, bear a proper relation to each other. These two factors have been see-sawing up and down for a number of years, and now that they are apparently balanced, it would seem the part of wisdom to leave both of them alone. An increase in the one invariably results in an increase in the other, and any change in either means hard feelings by somebody. We feel that there is an opportunity presented now for using forebearance and discretion and maintaining amicable relations which might easily be upset.

MARK YOUR PACKAGES

Numerous reports have come to our attention of serious, as well as irritating, annoyance from the fact that a number of Canadian paper makers and jobbers do not mark their own name on packages shipped. Where a number of packages come in at the same time, and one is urgently needed, it is annoying, to say the least, to be obliged to open up several in order to find the one that is desired; even then the stock man is not always sure that he has just what he wants, because in many cases, the ream is not properly marked with the size, weight, color and quality of the paper contained in it. This, often times, means opening up packages of paper that could much better remain in their wrappers until actually required. Besides adding greatly to the convenience of the purchaser, a proper marking of a package by the shipper with the shipper's name, would give him a certain amount of advertising value, and in the case of incorrect address on the package or mis-carriage for other reason, the transportation company would have an authentic address to communicate with.

We read recently some resolutions passed in a New Brunswick town, protesting further extension of time for the undertaking of the development of a water power at present controled by a private company and agreeing to take a certain amount of power from a power plant owned by the government, when so developed. If similar assurances had been given by a few communities when asked for by the private company, we venture to say the plant would now be under construction, if not actually in operation.

DOGS

The recently held Dog Sled Race at Quebec holds a good deal of interest for pulp and paper men, especially in Canada. One point of interest is that most of the teams were driven by men connected with pulp and paper companies. It is probably not understood and appreciated as much as it should be, the part that the dog plays in transportation of goods in the winter time in Canada; also in the carrying of passengers and mails. There are mills and camps, in Quebec and Ontario, which are practically cut off from the outside world, except for dog teams and snow shoes. A race such as was organized and held at Quebec recently and which was won by a team driven by Jean Lebel, who is connected with the Brown Corporation is likely to result in the breeding of dogs for sled work and develop valuable characteristics in the canine in much the same way as horse racing has developed the qualities of the equine. It is safe to say that the annual dog sled race will, in future years, be looked forward to and planned for with a great deal of interest.

THE FEDERAL SALES TAX

The Federal sales tax is attacked from many angles. Manufacturers, wholesalers and retailers object to it, according as the tax affects their particular business. A new phase of this opposition is voiced by those who are interested in supplying the mills with paper stock. Apparently no consideration has been given to the tax from the point of how it affects waste products, and in this connection it is asserted that the tax is likely to have a detrimental influence on the saving and collection of paper stock and other waste material.

Stock often passes through three or four hands before it reaches the mill, the tax being leviable on each sale. It is obvious that the total of the tax materially increases the price and is calculated to result in a loss of business to Canadian firms. Attempts to offset the tax by securing the material at lower prices from those who actually collect it will inevitably result in a scarcity of stock, as the collectors declare that lower prices do not make it worth while to bother with the work. Poor prices for paper stock involve poor collections.

Paper making materials are largely the by-products of other industries. For instance, quantities of cuttings are purchased from shirt and similar manufacturers, who pay the tax on this wastage by including it in the price charged for the finished article. This tax is in fact passed on, and in the end the consumer pays it. The government thus receives the tax on the material at the source of manufacture, so that there is no question of the wastage escaping taxation. The point is that additional taxation is putting an undue burden on those dealing in this stock, and is unnecessarily increasing the price to a point which affects trade.

There is another point to be considered. Much is said about conserving our resources, but comparatively little attention is paid to the destruction of vast quantities of paper stock which could be profitably re-used in the paper mills, thus conserving our forest wealth. Any taxation which will decrease the collection of that stock involves the utilization of pulpwood to replace the paper stock which has been uncollected and destroyed, thus unnecessarily making inroads on our supply of wood. — F. H. D.

ROLAND W. JOLLY

It is with sincere regret that the editor learned of the death, in New York recently, of Roland Jolly, who for a number of years was the New York correspondent of the Pulp and Paper Magazine. He had, of late, been publishing a very helpful office magazine called "Filing."

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift

There is an old saying we all used to hear when we were children that you can't eat your cake and have it. If each individual in this nation would learn the profound truth of this homely old maxim and put its teachings into effect in his own life, many of the social and economic troubles of the present time would disappear.

You can't squander all that you earn in days of prosperity and have a competency for the periods of adversity. You can't waste your time in idleness or ill-advised pursuits and hold your own in the race for success. You can't keep late hours, dissipate, over-indulge your appetite, or over-work to an unreasonable degree, and retain the blessings of good health. You can't associate with evil companions and retain the honor and respect of your worthy acquaintances. You can't be a miser in your practices and still have the vision, courage and good judgment to keep up in the procession of progress.

You can't waste your dollar and have it; but you can spend it prudently and have its equivalent. You can't waste your years and have them; but you can employ them usefully and have priceless possessions of your own creation.

Many of the ills of life are due to the mistaken attempts of those who try to eat their cake and have it. If you would develop in your work and achieve the ambitions of your life, remember this simple truth. Today's sacrifice is very often tomorrow's prosperity. Hard knocks are frequently blessings in disguise.

But following the line of least resistance; yielding to small and ill-advised impulses; making things easy or pleasant for the time being without thought of the future, inevitably lead to hardship and trouble.

Guard your resources; conserve your strength; improve your opportunities. You cannot eat your cake and have it. These are the truths of thrift.

The Efficiency Man in The Paper Mill

Is he a necessity or a luxury in a paper mill?

By W. HUNTER TAIT, late of Price Bros. & Co.

The Technical end of the pulp and paper business did not receive very much attention until comparatively recently when someone awoke to the fact that there was a great deal of wasted energy and costly experimentation being carried on by those who should have been confining their efforts to production only.

In the old times the paper mill superintendent had graduated from the ranks with nothing but his own experience to guide him, in collaboration, usually, with others of similar training. He could not turn to some recognized authority and put up his questions to them, and let them do the experimenting on a small scale while he and his large and expensive equipment went steadily ahead with production.

Production is, of course, the principal aim in life of every mill superintendent whether in a paper mill or any other. Next to this comes economy in operation of existing plant, and thirdly comes the possibility of installing new methods or equipment in order to improve on the first two objects.

In the first item, viz. Production, the practical knowledge of the handling of stock and in operating the machines to best advantage is of prime importance. No technical man could hope to make production successfully without a long training in the actual working condition.

The terms "economy" and "efficiency" are synonymous in operation of machinery. No machine can be said to run efficiently unless it is run economically, and no machine can be called economical unless it is efficient. This is where your efficiency man comes in. The practical operating staff cannot keep detailed records of the expenses attached to their departments and the efficiency man is quite as necessary to guide the operating staff as the ledger keeper is to the business as a whole. Some of the old time operators get quite indignant if an efficiency man is appointed, not realising that it is really to their advantage.

The foremen and superintendents give out orders to the stores for materials and usually get a daily report from the stores covering all charges against their department during the previous twenty-four hours. On receipt of this report they check it over and, if not correct, they have it rectified immediately. So far so good, but what about the itemised totals for the year or month, and comparisons with expenditure? The superintendent can know nothing about it as he is looking after production and has no time, and frequently has not the necessary education, to do these things.

The position reminds me of the impecunious situation usually imposed on the young Britisher in the Strait Settlements and in India. In these countries the "chit" system is in vogue. A "chit" is really an I.O.U. No one ever pays cash for anything, you go to an hotel, hire a hack or buy a pair of socks it is all the same, you give a "chit" for the value of it. At the end of the month or the quarter, as the case may be, the "chit-boys" come around and demand payment. If you are going away they all know it and you will find them lined up at the station, or at the shipside waiting for you. It is the recognized custom of the country and a refusal to pay is almost unheard of. The whole thing is very convenient except when you come to settle up. Then you find that you have spent much more than you had any idea of, but you cannot deny your own signature.

The superintendents and foremen are placed exactly in the same predicament as the young Britisher. At the end of a period they have no authentic records to guide them and enable them to put their fingers on the spot that needs correction.

I am aware that many so-called efficiency engineers make themselves decidedly objectionable to the operating staff, and create the impression that they are a sort of glorified detective department to find fault and report to headquarters. These men are of course, an expensive luxury, and create more trouble than they are worth without getting any results. Moreover, they are seldom really qualified for the job. No ordinary office man is competent neither is a purely practical man, for obvious reasons.

The efficiency man must know the office system from beginning to end, he must also be familiar with all parts of the mill and the operation of all machinery. He does not need to be able to actually operate the machines personally, but he should know where they come from, what the manufacturers rate them to produce and the general method of operation. He must, above all, have the faculty of getting on well with the men, and foster the nebulous idea in their minds that he is really working for their interests as well as the company's. This idea, of course, is absolutely true but in some hardboiled cases it may be hard to convince them.

The wise and competent efficiency man can, however, after the first few months' reports have been made up, convince the most stubborn. The foolish and incompetent man will simply go from bad to worse until he gets the whole operating staff up on their hind legs, and he will find it impossible to get correct information outside. As everyone knows the reports received in the office are not always correct and frequently need to be questioned, in these cases the wise efficiency man has no difficulty in getting all the informations he wants and probably a little more, but the foolish man will receive the cold shoulder and the usual "don't know."

In my opinion the personal equation enters into the success or otherwise of the efficiency department quite as much as any other qualification mentioned.

The efficiency department is always busy although it may not be apparent to the ordinary observer until the end of a period. Before bothering with the efficiency of other departments the wise man will see to the efficiency of his own. He must organize a method of collecting data daily and having it recorded properly ready for the charting and making reports to superintendents at the end of each period. He must have access to all office records and devise means of making a cross check on them by getting some of the principal items independently.

At the end of the period he will have an itemised record of all the principle items of expenditure, and can develop the system until it gives the cost and the life of every wire, felt, belt, etc. both on a tonnage and a monetary basis, also the operating cost of every piece of machinery on the basis of supplies, repairs and labor, also tonnage produced individually.

This information cannot fail to be of infinite use to every foreman and superintendent who is trying to get the most that is possible out of his equipment economically. He must get rid of the idea that the company is hiring an expensive official merely to keep tabs on him. They are hiring this man and his staff as a help to the operating staff to get the best possible results, these, of course, ultimately resulting in better dividends, and frequently to bonuses to employes.

The information gathered by the efficiency department is also of the utmost value to the Purchasing Department. It gives them a good record of the performance of supplies and equipment purchased and gives them a clear guide when buying renewals.

I think, in view of everything, that the efficiency man is a necessity. The quality of this man depends on the perspicacity of those who hire him, but the foolish man never lasts long and is bound to give way to a good man very quickly.

We now come to the third item of the General Superintendent's ambition, viz. installation of improved methods and equipment in order to increase both production and economy.

These phases come entirely under the Technical Department proper. Improved methods are studied by the Chemist, and improved machinery by the Engineers. The records kept by the efficiency department are again called upon to furnish information on past experience in a tangible form for comparison.

Lastly, as the parson says, we come to the periodical visits of the Directors to the mills. They don't want to wade through any voluminous statistical reports and comparisons, the head office gets all of that kind of dope and they have already in all probability seen it on arrival. They pay a visit to the efficiency man and are shown comparisons of costs and production etc. neatly recorded on charts where a glance will show general comparative results.

It would seem then that the efficiency man is of great use to almost every department of operation. He should have nothing to do with construction or anything that has not been placed in operation. These are capital accounts and should be entirely in the hands of the Engineers until operation begins.

CURIOSITY OVER WASTE PAPER

What does the Government do with its waste paper?

Questioned in the House of Commons on the point, Hon. A. B. Copp, Secretary of State, said yesterday than in Montreal the postmaster was authorized to sell waste paper to the highest bidder, while the Customs' Department baled its paper and "sells it to the best advantage." In Ottawa the waste paper of the departments was disposed of under contract.

The question did not touch on other centres.

ADVOCATES GOVERNMENT PAPER MILL

In one of the most exhaustive reports ever sent to Congress by a Public Printer, George H. Carter, in his annual report to that body, strongly advocates Government ownership of a paper mill to supply the needs of the Government Printing Office, as well as other branches of the Government service, as an economical measure.

Needless to say, there is not much sympathy, outside of Washington, with government competition in the field of legitimate private enterprise.

REDUCED RATES FOR PAPER WEEK

The American Paper and Pulp Association, acting both for itself and the National Paper Trade Association, has closed arrangements for reduced railroad rates for those attending the convention of both associations during the annual Paper Week, the week of April 9. The usual provisions will be in force, such as the securing of certificates on the purchase of tickets, and the having these certificates validated by Dr. Hugh P. Baker, executive Secretary of the American Paper and Pulp Association at convention headquarters. The out of town people attending the Paper Industries Exposition will also be able to secure the reduced rates, if they register at the convention as well.

All of the railroad associations reaching the chief paper making districts have granted the reduced rate of one and a half fares for the round trip, and this includes the eastern Canadian region as well as the United States.

The American Paper and Pulp Association will issue a folder well in advance of the convention, explaining in detail how those wishing to visit New York during Paper Week should proceed to secure the reduced rates, which are applicable to dependent members of the families of those attending the convention, as well as to the manufacturers and merchants.

Meanwhile, arrangements for the convention are proceeding rapidly, and the dates for the meetings of the various affiliated associations will soon be announced. As usual, Thursday, April 12, will be devoted to the general meeting of the American Paper and Pulp Association, at which the members of the National Paper Trade Association will be welcome. The custom of a joint session of the merchants and manufacturers on Thursday of convention week has been found to be of great value to both groups. There will be no session of the American Paper and Pulp Association on Thursday afternoon, as this time has been set aside for a visit to the Paper Industries Exposition at the Grand Central Palace by all those in New York for Paper Week. Thursday evening, is the date for the annual banquet, and the reservations are already coming in to the Association officers in goodly numbers.

The week's program will include meetings of nearly twenty separate associations in the manufacturing field alone, in addition to those of the merchants, and the several days of sessions of the Technical Association of the Paper Industry.

RIORDON SELLS HARDWOOD LIMITS

The sale last week of another group of Riordon timber limits brought the total sales during the past year or so to 15,000 square miles. The company has had a return of about $2,500,000 from the sale of all these limits.

This week 500 square miles of hardwood limits on the Nation River were sold to the Singer Sewing Machine Company at a price of $500,000. The Singer firm has a plant at St. John's, Quebec, where considerable hardwood is consumed. It is understood that water power rights were not sold.—Financial Post.

HOWARD SMITH ANNUAL

At the annual meeting of Howard Smith Paper Mills, Limited, held in Montreal Monday, Harold Crabtree was elected a director, replacing J. J. M. Pangman, resigned. The other directors were re-elected and business was entirely routine.

China Clay in Cornwall

AN INTERESTING VISIT TO THE CORNISH CLAY MINES OF MESSRS. H. D. POCHIN & CO., LTD.

By W. Tretheway

A map of Cornwall showing the numerous China clay mines of the firm of Messrs. H. D. Pochin & Co., Ltd., is sufficient to demonstrate the wide-spread and important operations of this well-known firm. For the benefit of our readers I made a special visit to some of their China clay mining operations on a recent Saturday afternoon, and obtained quite a revelation of what sound business experience and a supervisual control, combined with the requisite resources of a well-established firm, can achieve. It will be impossible to trace with more than a small degree of exactness the progress and development of this world-famous firm even as far as it concerns the China clay industry. They are undoubtedly great architects in the commercial kingdom, and their large establishment with business tentacles in so many directions and in all parts of the world is practically the evolution of three ideals constantly pursued by this firm for more than a century. The first relates to the quality of the goods, the second, promptitude in despatch, and the third, the efficiency of their business system.

More than half a century ago the late Mr. H. D. Pochin discovered a process for the manufacture of aluminous cake using China clay as its chief ingredient. This new form of alumina, which became so largely used by paper makers throughout the world, proved a notable triumph for the firm, who were then more concerned in the manufacture of chemicals. The firm were even at that period fairly large consumers of China clay, but the demand for their aluminous cake exceeded their most hopeful expectation and necessitated the acquisition of their own China clay mines. As a result the famous Gothers Mine in the parish of St. Dennis was acquired in the early seventies. Gothers Mine at that period was but a small proposition for the firm of H. D. Pochin & Co., Ltd., and under the early direction of Mr. William Pochin the capacity of this mine was revolutionized. It was at Gothers that the gas engine for pumping and also for winding was first introduced, which is now rapidly usurping the place of the old Cornish steam pumping engines.

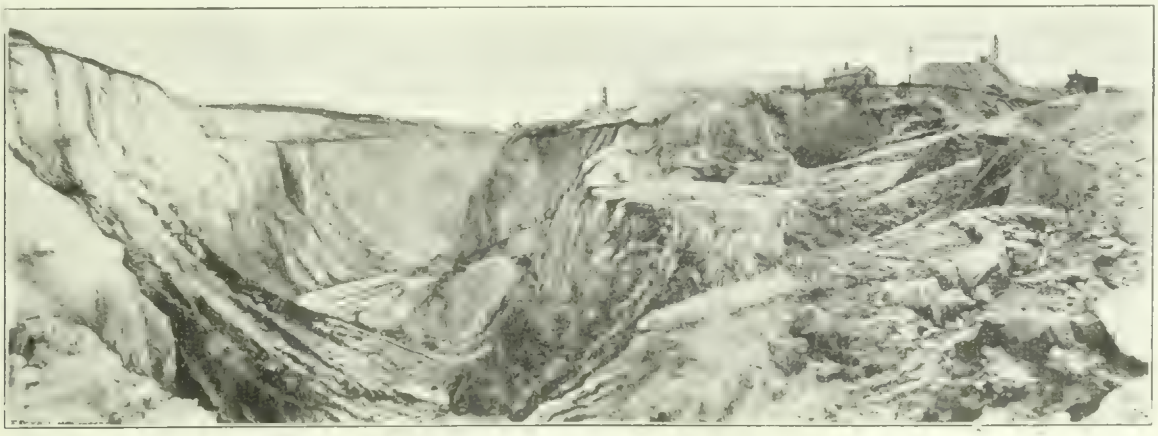
There are six very large drying kilns and the drags and tanks are ingeniously surveyed and constructed with a view to the elimination of all impurities as well as effecting the utmost economy. Over 40 years ago a light railway was constructed linking up each of the kilns with the main line of railway, passing through a couple of miles of the famous Goss Moors owned by Lord Falmouth.

The storage capacity of clay ready for shipment at Gothers is nearly 6,000 tons, which enables the firm to accelerate large shipments when required, and represents nearly 60 years output of its earliest production.

An important expansion that followed was the acquisition of the Balleswidden and the Leswidden Mines in West Cornwall, and the extension of the loading facilities at the Penzance docks. At Parson's Park, situated north of Liskeard, the deposit has more than met the Company's anticipations. Here the appliances of production were brought up-to-date by the addition of a powerful water turbine and a gas engine. The mine is connected with a drying kiln at a distance of nine miles by an earthenware pipe line and is linked to the main Great Western Railway line at Liskeard and also with the Looe Railway, at which port the firm have secured private facilities for loading.

It was, however, subsequent changes that marked such a momentous era in the history of Messrs. H. D. Pochin & Co. Ltd., whereby their productive capacity in China clay alone approximated 200,000 tons per annum. This was the possession of Gunheath, a mine with a world-wide reputation, as well as South Caudledown, South Goovean and the Wheat Remfry China clay mines, together with several well known China stone quarries and grinding mills and also a valuable Ball Clay deposit at Mainbow and Newbridge in Devonshire. From whatever standpoint such enormous expansion is viewed, there are two characteristics, enterprise and energy, that seem to stand out as the hallmarks of the firm from its inception.

The cordial relations that exist between the firm and their employees have also contributed largely to the unobstructed progress reflected throughout their long commercial life. Messrs. H. D. Pochin & Co., Ltd., recognise that the men are quite as anxious as themselves to get to work and do their bit for the progress of the industry.



South Caudledown China Clay Mine

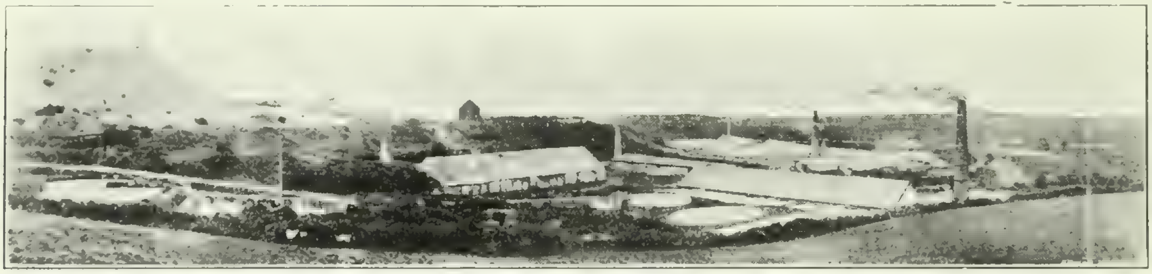
Although I have frequently been in the vicinity of the Gunheath Mine, this occasion was practically my first visit to the Works. This mine, which has had a great reputation for more than a century, had been in the possession of the Higman family who have been associated with the China clay industry for the past century. I was received at the works by Captain W. Kellow, accompanied by Mr. J. W. Higman, Jr., who is a son of Mr. J. W. Higman, the former proprietor of the Gunheath Mine, and who, I was glad to observe, was fulfilling the highest traditions of an illustrious family and fully maintaining a "clarium et venerabile nomen" in the China clay industry of Cornwall. This mine has evidently been one of the bright spots throughout the period of trade depression. Its native blue clay, so adaptable for a variety of uses, has maintained such a steady demand that no slack time has been experienced by the clay-workers. During the recent erection of the new dry, micas and the pipe line connecting the micas with No. 2 and No. 4 kilns, the firm found employment for only 50 men, but now on completion they have returned to their normal engagement of 110 men. Mr. Higman informed me that the excellent brands produced at Gunheath were the G. H. and G. H. R. native blue clays and the H. D. P., a superior pottery clay. These have met with such great demand from the paper making, bleaching and pottery markets, both at home and abroad, that the productive capacity of 125 tons per day has been insufficient to meet requirements. Looking down into the pit from the old engine house one is induced to ask why a larger hole had not been made after nearly a century's working.

There can be little if any anxiety entertained by Messrs. H. D. Pochin & Co., Ltd., regarding the future of their enterprise as the clay is known to exist far beyond the present workings, and even if the demand were doubled or trebled the deposit would not be exhausted within a measurable term of years.

The equipment of this mine includes some of the newest, as well as some well-tried engines. In addition to the large Cornish engine, erected in 1847, there is installed in the pit, a 120 h.p. gas engine generating electricity for an electric motor-driven centrifugal pump which, with the Cornish engine, has a total pumping capacity of 1,800 gallons per minute. The winding of the whole of the sand is done by a 65 h.p. Campbell gas engine.

The clay is washed on the hydraulic system, which gives the highest satisfaction. As soon as the clay water reaches the surface its refining process is begun. First it passes through a series of "micas," which consist of from 15 to 20 troughs, about 1½ feet wide and 220 feet long, constructed of concrete, where the sand settles out. At the bottom the clay has to pass through a succession of very fine gauze traps, which eliminates floating impurities and foreign matter. From here the clay and water pass into settling tanks, where the clay slip settles to the bottom and is then filtered, while the supernatant water is drawn off. The old settling pits and tanks have been improved and several new ones constructed to provide the additional output required. These extensions and the new kilns have been built from the designs of the firm's own engineer.

The kilns are advantageously connected with the railway line and Gunheath forms the terminus of the Bugle and Stenalees branch of the Great Western Railway.



Gothers Deep.

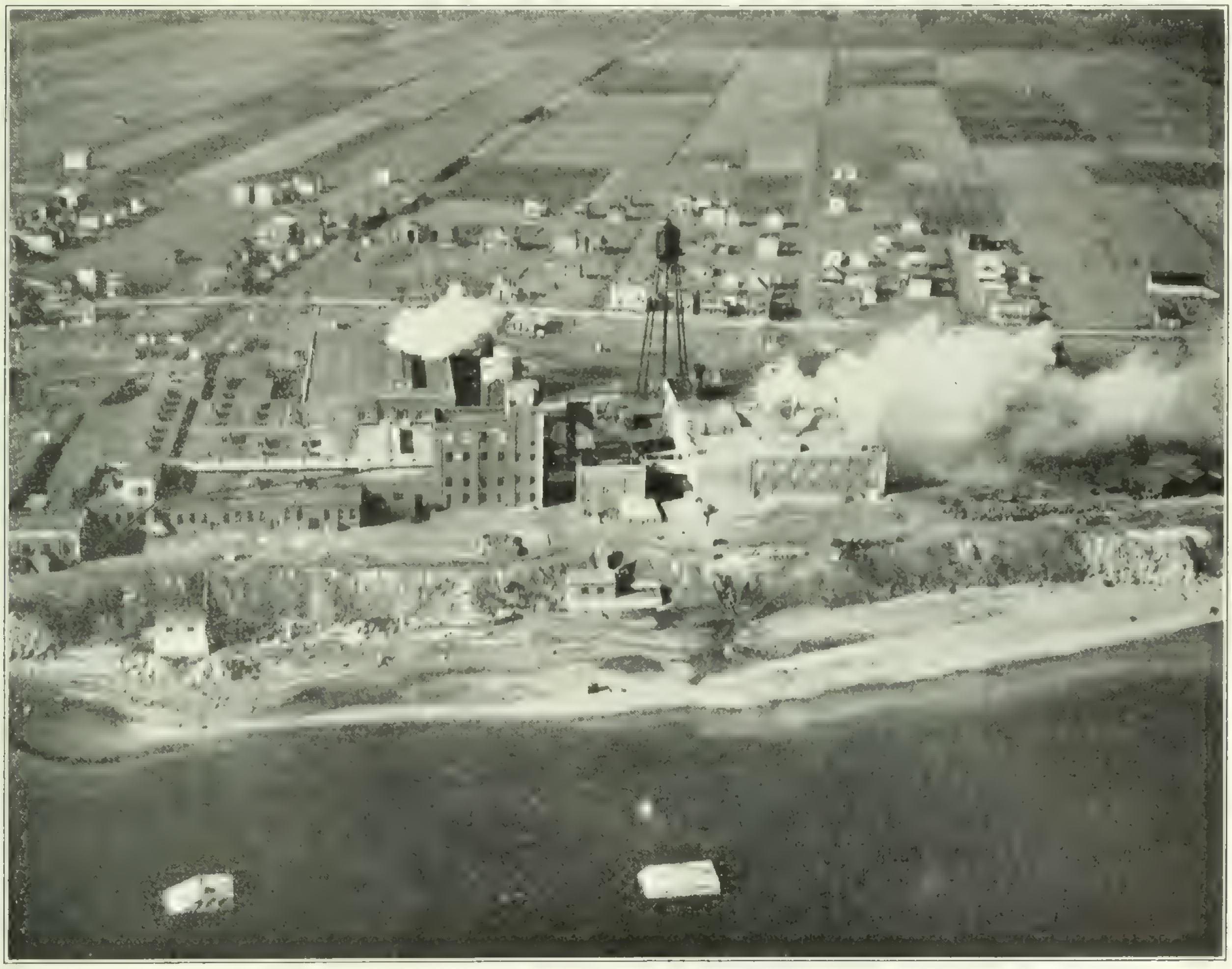
Acting upon the special request of Mr. David T. Taylor, the General Manager, who is following in the best traditions of the firm, I accepted the invitation to see the South Caudledown Mine, about a mile distant. This mine, although more famous than Gunheath on the point of quality, presents quite a different problem to the proprietors, which, however, they are undertaking with their characteristic energy. This pit is hard to describe. It resembles a white ravine penetrating to a great depth and is long and narrow. It is bounded on one side by granite dykes of large dimensions, rendering the extraction of the clay concealed underneath an unenviable task. Mr. Higman informed me that the development of this mine was an expensive proposition but the firm were determined to use their best endeavours to make it a success. The

Gunheath Pit

narrowness of the pit precludes the use of the usual winding operations for the present, but arrangements are being made for its ultimate adoption. Here again the inventive mind has been active and this mine was the first to adopt the Blondin method of removing overburden. The deep brands of clay produced at South Caudledown are in greater demand than can be provided, both among the paper and higher grade pottery manufacturers.

The destinies of this large group of China clay mines are in the capable hands of the Chairman, the Hon. H. D. McLaren, C.B.E., M.P., and the Managing Director, Mr. H. Stanley Pochin, J.P., whose guiding influence and inspiring genius are followed with great interest by the whole community.

The Paper Mills at Three Rivers



THE ST. MAURICE PAPER CO.

An air plane photograph, prepared for the Pulp and Paper Magazine by Fairchild Aerial Services, of the plant of the St. Maurice Paper Co. Ltd., at Cap Madeleine, Que. This fine mill produces, ground wood, sulphite, and sulphate pulps, and newsprint paper.

Note: Three Rivers is at the confluence of the St. Lawrence and the St. Maurice Rivers, not the Ottawa, as erroneously given in a previous issue. We knew better.

PAPER SHOW PLANS PROGRESSING

Contracts for space at the Paper Industries Exposition to be held at the Grand Central Palace the week beginning April 9th, are coming in daily, and there are now forty-five companies which have definitely closed contracts for space, several taking two or more booths. In addition, there are twenty-one companies which have made tentative reservation while formal contracts are being drawn up, the large number already secured assuring even at this early date, the complete success of the big paper show.

The recent contracts include some notable exhibits of paper manufacturers. The American Writing Paper Company, for instance, has definitely closed for space, and other companies making paper have already so generally closed contracts that it is now certain that exhibits of writing, tissue, glazed, ledgers, bonds and other papers will be part of the Exposition's paper display, vegetable parchment and similar special papers will also be shown, while on the converting side space has already been secured for the showing of bags, cups and paper containers of all kinds.

The interest taken outside of this country is shown by the fact that foreign paper manufacturers have secured space for the showing of their wares. In addition to the exhibits from Europe, it is of interest to note that an important Canadian paper manufacturer has this to say of the Exposition:

"I congratulate you for having taken this up, and I am sure it will be a success. Let me know what the conditions are and in what form you would suggest our exhibiting."

Arrangements for the securing of reduced rates for those outside the city desiring to attend the Exposition have been made through the American Paper and Pulp Association, which has secured reduced rates for its members to attend the conventions being held the week of the Exposition. Those wishing to attend the Exposition can secure reduced rates on the railroads, and be admitted without charge to the paper show by registering at the convention of the paper association.

The Exposition management the past week sent out 200 letters to associations of printers, publishers, stationers, bankers, food packers and other large users of paper, asking them to notify their memberships of the Exposition, and the opportunity extended to learn the whole story of the paper industry. Special arrangements are being made to arrange for the admittance of members of such organizations, and the advertising campaign to printers particularly is now running in the printing trades and other allied trade journals.

Meanwhile the proposed Printers and Publishers Day, Friday, April 13th, has been enlarged to include the advertisers, with special attention to the big direct mail advertisers, who are such important users of all of the finer grades of paper. Several notable speakers have been invited to participate in the program on Friday afternoon.

Clean Food day is being arranged, but the date has not been definitely set. It seems certain, however, that a special day will be set aside for the discussion of the use of paper and pulp containers to protect food from filth in its route to the consumer. Waxed paper on bread, vegetable parchment, glassine and greaseproof, and other special papers will come into this discussion, as well as boxes, cans and pails made of paper.

All of the printing schools in the neighborhood of New York are being invited to send their students to study the paper problem, so that they can become better printers, and vocational schools teaching subjects allied to the paper industry are included in this invitation, such institutions as the College of the City of New York, the Columbia University's chemical engineering department, and similar public and private institutions of learning.

EIBEL PATENTS DECLARED VALID

Under a decision by the United States supreme court, handed down February 19, in the case of the Eibel Corporation against the Minnesota and Ontario Company, the patents of the Eibel Process Corporation on improvements of the Fourdrinier machine for manufacturing news print paper were declared valid.

The suit involves claims by the Eibel Corporation that their patents enable the control and operation of the Fourdrinier machines through which their speed can be materially accelerated, so as to increase the daily production of news print paper by twenty to thirty per cent.

The decision will have the effect of prevailing in a similar case which is now pending, and which involves the Remington Monte Company.

Originally, suit was filed by the Eibel people in a federal court in Maine in 1917, resulting in the entering of a decree of injunction against the Minnesota and Ontario Company in 1920. On an appeal to the circuit court of appeals, the judgment of the district court was reversed. Meanwhile another suit was filed in New York against the Remington Monte Company.

LEARY WAS WITH LAURENTIDE

Warren D. Leary has withdrawn as treasurer of the Chippewa Valley Press and advertising manager of the Chippewa Daily Gazette. Mr. Leary went to the Daily Gazette just a year ago as news editor. He was at one time connected with the New York Herald and was editor and manager of the paper plant of the Laurentide Company at Grand'mère, Quebec, Canada. Mr. Leary has not made known his plans for the future.

PRICE BROS. MAY START NEW MILL

(Chicoutimi, March 6; despatch to Quebec Telegraph)

The mayor and the aldermen of Chicoutimi paid an official visit last Sunday to Kenogami where important works are already in progress and more are to be started. The object of the visit was to meet Sir William Price and not only to thank him for the development of that region but also to offer cooperation from the city of Chicoutimi.

Sir William arrived from Chicoutimi in the afternoon accompanied by his son, Major Jack Price and Mr. Mitchell, general manager and Mr. Nesbitt. The city council suggested to Sir William that everything would be done to obtain the establishment of another mill. Sir William stated "To give you in Chicoutimi, a paper mill, I will ask you certain privileges. If you offer me too much I will refuse, but if I ask you too much, refuse me and I will plead my own case." Finally the representatives of the city returned with the impression that they would soon benefit from the installation of one of those mills which under the direction of enterprising business men tends to develop the country to a great extent.

Rotten Wood in Paper Making

By C. S. V. HAWKINGS, Chief Chemist, Price
Brothers & Co., Ltd., Kenogami, P. Q.

Discussion continued from last issue on paper entitled "How far can the Pulp mill go in utilizing decayed, insect-killed or other inferior wood in the manufacture of Pulp" read by John S. Bates, Bathurst Co., Ltd., Bathurst, N. B. at the annual meeting of the Woodlands Section, Canadian Pulp & Paper Association, Montreal, January 25th, 1923, and published in Pulp and Paper Magazine, January 28th, 1923.

The primary object in a discussion of the use of rotten wood is to detail some method of estimating percentage of infection. This would not be such a problem if there was not the related question of how rotten the parts are. It is impossible to estimate this phase of the question by looking at the wood, and so far there does not seem to be any definite solution. For the sake of comparative figures there are two methods that can be used. First, if a two foot log contains a core of infected wood the ends would be measured and the volume of rot calculated on the basis of a perfect core or cylinder as the case might be. Tables were prepared so that these figures would be calculated at a glance. In the second place when the logs are chipped a representative sample of the chips is taken, the actual infected chips sorted out and the percentage calculated. These two methods have been found to give reasonable checks, but in any case the figures for percentage rot are but estimations. They should be considered as such. They do not lend themselves to close comparison with other tests. The question of how far the newsprint mill can go in the use of rotten wood was the subject of a test made in January 1922 at Price Bros. & Company, Limited, Kenogami Mill. This report is perhaps interesting enough to give in full. You will note that the percentage are estimates for *infected* wood and this may well explain the discrepancies that appear in some parts.

Tests made at Price Brothers & Co., Ltd.

These tests were carried out with a view to discovering the effect of rotten wood on newsprint paper and for the purpose of discovering how great a percentage a paper mill would be justified in using, without a danger of unduly lowering the quality of the paper.

In order to judge the quality of paper produced from partly rotten wood, three runs were made (1) all sound wood (2) wood with 12 per cent. rot (3) wood with 26 per cent. rot. Regular sulphite cooks in No. 3 digester with 17 cords to a charge were made, and a groundwood run using 10 cords and 7 grinders. The total product of each stage was run over the wet machines, weighed, sampled for moisture, broken up in a beater and run on No. 1 paper machine. Samples of the pulp and paper made on these runs were collected. The usual tests on the newsprint paper were made and are included in the following summary of results.

In the case of the groundwood from wood with 26 per cent. rot, no figures are available due to the fact that this was abandoned shortly after starting.

Methods.

Racking of wood was accomplished by piling the 2-foot blocks in racks of suitable size, holding 2-cords, i.e. 16′ x 8′ x 2′. For estimating percentage rot, the average diameter of the rotten area was measured and the cubic contents estimated by a table compiled for volumes of perfect cylinders of varying diameters. The chips were allowed to run directly into No. 3 digester, insuring that the total run was cooked. The method of cooking was that usually followed in the mill. The total product of No. 1 and No. 2 grade of sulphite was weighed.

The grinding of 10 cords took approximately seven hours. The tailings or No. 2 groundwood were allowed to go to the sewer, as no facilities were available for measuring this grade of pulp.

For each charge of the beater, 950 lbs., of wet sulphite laps were weighed out and the balance of groundwood added. Color was added to bring the sheets as nearly as possible to the standard.

The tests made on newsprint include cleanliness, basis weight and Mullen test. The averages of a number of tests made on the run are included in the tables.

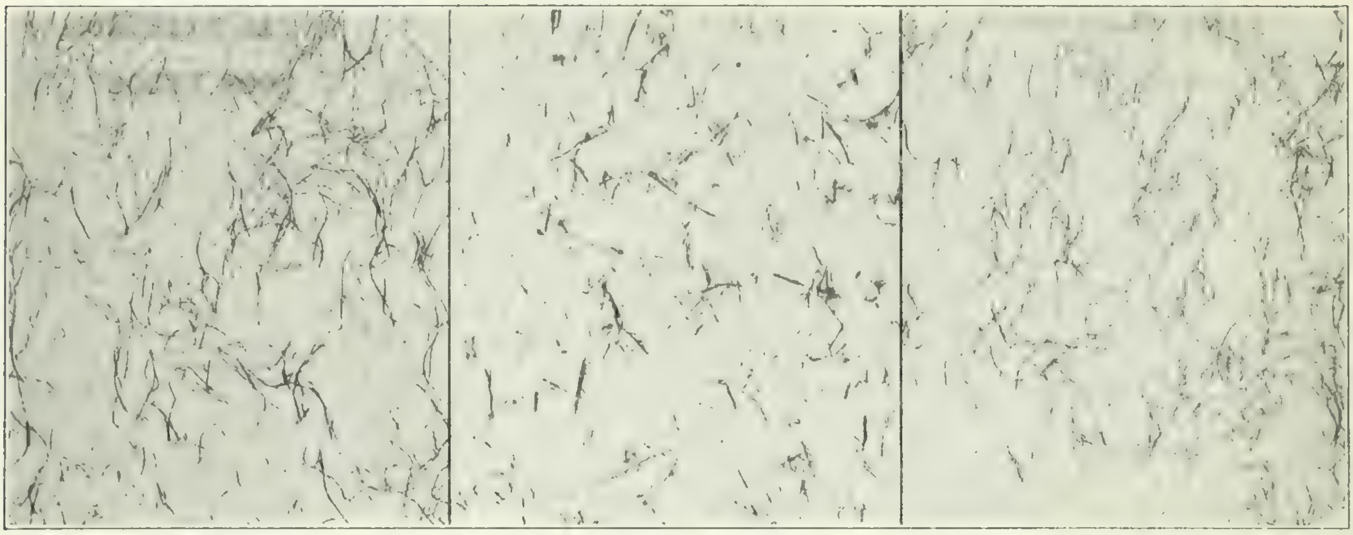
SULPHITE TESTS

	Sound Wood Run No. 1	Rotten Wood Run No. 2 12% Rot	Rotten Wood Run No. 3 26% Rot
Wood used, cords	17	17	17
Volume rotten wood, %	—	12	26
Date of cook,	Jan. 5	Jan. 6	Jan. 12
Acid			
Analysis — Total SO_2	4.40	4.44	4.67
Free “	3.26	3.30	3.58
Combined “	1.14	1.14	1.09
Temperature (deg. C.)	27	28	27
Gals., Approximate	20,000	20,000	20,000
Cooking			
Maximum Temperature	146	149	145
Maximum Pressure	65	65	65
Cooking time	9 h. 20 m.	9 h. 40 m.	9 h. 40 m.
Moisture in chips %	46.4	49.0	54.7
No. 1 Pulp Produced			
Total wet weight, lbs.	53,610	44,620	45,835
Air dry pulp, %	33.2	35.5	35.0
Air dry pulp, tons	8.89	7.92	8.00
Cords of wood per ton of pulp,	1.91	2.14	2.12
Yield per measured cord, tons	0.524	0.467	0.472
No. 2 Pulp Produced			
Total wet weight, lbs.	1,630	1,445	1,604
Air dry pulp, %	36.6	37.9	36.2
Air dry pulp, tons	0.30	0.27	0.25
Yield per measured cord, tons	0.018	0.016	0.015
Total yield per cord, tons	0.542	0.483	0.487

GROUND-WOOD TESTS

Wood used, cords	10	10	10
Volume rotten wood, %	—	11.6	26
Time to finish, grinding hours	7	6¼	—
Date of grinding, -1922-	Jan. 4	Jan. 7	Jan. 13
Wet weight, lbs.	57.719	55.785	—
Air dry pulp, %	31.9	31.7	—
Air dry pulp, tons	9.20	8.89	—
Cords of wood per ton of pulp,	1.085	1.13	—
Yield per measured cord, tons	0.92	0.88	
Paper			
Date of run -1922-	Jan. 6	Jan. 7	Feb. 1
Average basis weight	31.5	32.0	31.7
Average Mullen test,	8.9	8.3	9.6

Sulphite Fibre — Ground Wood Fibre — Sulphite Fibre



Sound Wood — Wood 12% Rotten — Wood 25% Rotten

Cleanliness, specks per square inch	13	16	22
Sulphite furnished, %	19.1	21	21.1
Color added,	3 qts.	5 qts.	6 qts.
Color of finished paper	Very good	Very good	(Slightly (black.
Formation	Good	Good	(Better than (Average run.
Finish	Good	Good	Good

Summary

In regard to the running conditions of the stock on the paper machines, no difficulty was experienced with Run No. 2. Run No. 3 was composed of slow stock due to groundwood flour, and caused a great deal of trouble on the wire. Run No. 3 evidently had a high loss of groundwood fibre on the wire, as the furnish showed 21 per cent. sulphite and 29 per cent. was found in the manufactured paper. Tinting gave some trouble. Run No. 2 had to have additional color and Run No. 3 still more, and even then the final color could not be made to match the standard. The sheets of Run No. 2 and No. 3 contained more dirt than usual as shown by the specks per square inch. The high Mullen test of Run No. 3 is no doubt due to the closing up of the sheet with fine fibre and increase in percentage of sulphite.

The sulphite stock showed a decreasing quality in color and cleanliness with increased percentage of rotten wood. The fibre was evidently not quite as good, but this did not show anything like the decrease in quality noticed in the groundwood. The yield shows a situation that is hard to explain, in that the yield was approximately the same in Runs No. 2 and No. 3. It is possible that as rot is hard to judge as to extent, the wood was not as badly decayed in Run No. 3 as in Run No. 2.

The groundwood stock showed a marked decrease in quality and color for increasing percentages of rot. Although there are no figures available for Run No. 3 the yield was undoubtedly low and the quality was such as to make it doubtful if the stock would run on the paper machines.

The facts seem to indicate that 10 per cent. is a maximum figure for rotten wood as measured in this test. This of course if both groundwood and sulphite are supplied with wood from the same source. This raises the question as to whether it would be advisable to increase the amount of rot supplied to the sulphite, take a decreased yield and small change in quality and supply the groundwood mill with better wood and thus increase the general quality of the stock supplied to the paper mill. Carrying this further, it might be possible to use up a great deal of rotten wood in sulphite, as the parts badly affected disappear altogether in the process, leaving only true fibres. This is not the case in groundwood.

If 10 per cent. of rotten wood were supplied to the mill and all this rotten wood were turned into sulphite, the percentage of rot would be approximately 25 per cent. in sulphite runs, leaving absolutely sound wood for groundwood.

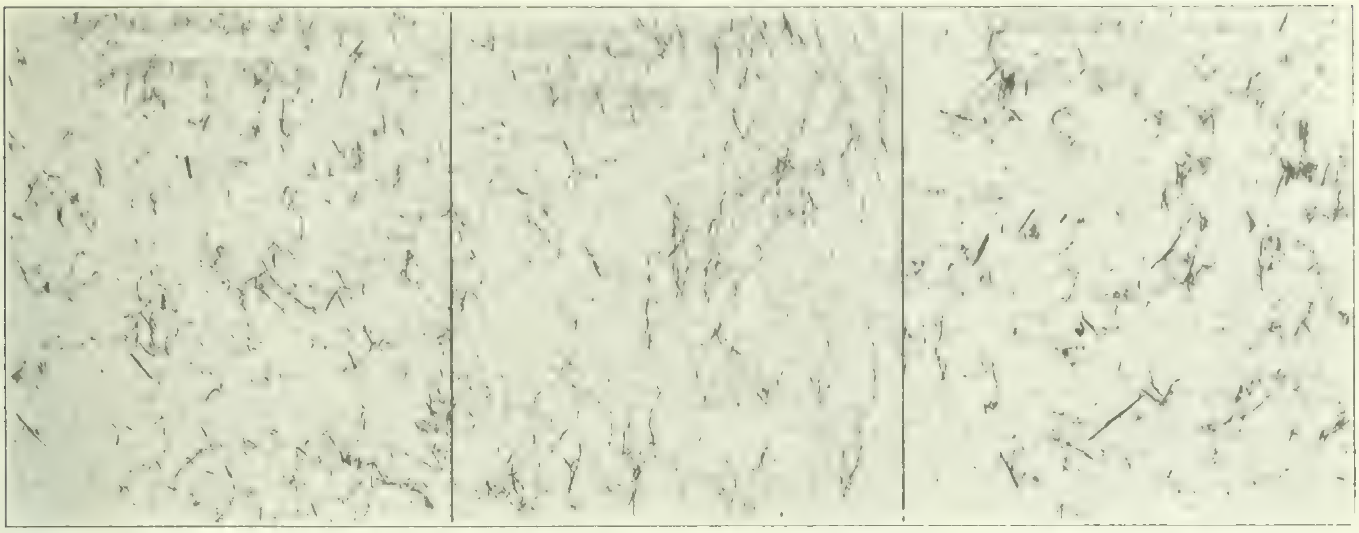
Another solution to the problem would be to sort out the infected wood and in the case of the groundwood mill, grind this on separate grinders, possibly during full production. For sulphite it would be advisable to run one digester and separate the screening system, so that the pulp would be fed into the regular supply in small quantities.

Such an arrangement would have the advantage of allowing specially adapted treatment to be used on this class of wood.

The policy of segregating rotten wood looks like a reasonable step. The operation will be costly and it will have to be looked into in more detail. The fact remains that the situation is not improving. The percentage of rot in the raw material available is ever increasing. There is not only the problem of whether we can afford to use rotten wood or partly infected wood, but also whether we can afford to pass up anything that will turn out pulp of a reasonable quality. It is pretty well understood that good fibres are still present in wood that looks hopeless. From the groundwood standpoint we might as well consider that they are not there as the rotten parts that go along more than counterbalance any good fibre.

From a chemical standpoint they are still there and can be utilized. The coloring matter which proves so objectionable in groundwood is almost entirely overcome. The yield suffers to a greater extent but this is only to be expected. The groundwood yield decreased by 4 per cent. in wood estimated 12 per cent. while the sulphite in the same run dropped almost 11 per cent. These tests seem to correspond reasonably well with those carried on a year or so previous

Ground Wood Fibre — Sulphite Fibre — Ground Wood Fibre



Sound Wood — Wood 12% Rotten — Wood 25% Rotten

at the same mill. The points to be emphasized are that it is perhaps the color and dirt more than anything else that causes the unsatisfactory results for groundwood. There is also a great loss on the paper machine. The strength seems to be still there but the fibre is short, causing a close formation of the paper and incidentally a very heavy loss in white water. Another point substantiated in this test is the fact that the moisture figure is considerably higher in rotten than in sound wood. There is included a set of photographs, at 5 diameters magnification, of the fibres produced. It is to be noticed that slivers increase quite rapidly in groundwood with increasing percentages of rot. That the best place to use up rotten wood is in the chemical processes seems to be the general opinion. It only remains now to see how far the cost of sorting and of raw materials for decreased yields will allow any mill to use up this class of wood in the chemical processes.

SHIPPED FIRST CAR OF PAPER

The Westminster Paper Mills Limited, having a plant recently completed at a cost of approximately $250,000 on the old Indian Reserve, New Westinster, B. C. has shipped its first car load of tissue paper to Winnipeg. The mill is owned by a group of Ontario and Wisconsin operators headed by Peter Onkle. A. Onkle, Henry Lord and Daniel and Michael Herb.

A change in the program for the annual banquet of the American Paper and Pulp Association has been forced by the Swedish pulp mills strike. The original plan of the Association was to make the banquet an International evening, with notable leaders of the industry from the different Scandinavian countries as the speakers. The Scandinavians, because of the Swedish situation, have been forced to cancel the tentative arrangements they had made to attend the banquet.

Great Northern Paper Company announces the removal of its New York Office from 30 East Forty-Second street to The Canadian Pacific Building, 342 Madison Avenue, New York City. The Telephone is Murray Hill 5984.

Institute Items

WHAT PEOPLE SAY ABOUT OUR SCHOOL

The following was found in an editorial in "Industrial Canada":

A Pulp and Paper-Making Course

A correspondence course in pulp and paper-making is now available in Canada, thanks to the efforts of the Canadian Pulp and Paper Association and the publishers of the "Pulp and Paper Magazine". The course is based on a set of text-books on the manufacture of pulp and paper, compiled during the past few years under authority and direction of the pulp and paper manufacturers of Canada and the United States. It is given by the Institute of Industrial and Domestic Arts, Gardenvale, Quebec, under the direction of an advisory committee of the Canadian Pulp and Paper Association.

While technical schools are doing much for the training of Canadian artisans, it is obvious that they can by no means meet all needs. A well-organized correspondence course should be able to render great assistance and there is good reason to believe that the course referred to, having the sanction and support of the organized pulp and paper manufacturers, will be of decided benefit. The faculty of the school of pulp and paper making is drawn from the best men in the trade, and includes men of practical experience, holding responsible positions in the industry. A syllabus of the course has been printed, which gives an explanation of its nature and scope.

STUDYING UNDER DIFFICULT CONDITIONS

A Student in the Pine Tree State writes as folows:

"Thank you for the help on the questions.

I am completing my winters' work in the woods this coming week, having scaled for the past three months. The drive this spring means even more difficult conditions, but I will do my best. Hope to stave through somehow in good form, however. The work is mighty worth while, and I believe in its merits."

Great privileges always go in company with great responsibilities.

SWEEZEY ON BAY SULPHITE BOARD

The recent visit of Sir Frederick Becker to Canada, it is understood, will result in his accepting the presidency of the Bay Sulphite Company, of Port Alfred, Que., and in further developments for this prosperous and growing producer of sulphite pulp.

Another new interest will be R. O. Sweezey, of Newman, Sweezey & Company, who has just joined the board of the company. Mr. Sweezey is well-known in pulp and paper circles as an expert on timber limits, and the pulp and paper industry in general. He is thoroughly familiar with the Saguenay district, in which the Bay Sulphite Company is located, and it is believed his services will prove of great value to the company.

It is pointed out that Mr. Sweezey's activities in neither the engineering nor financial field will be interrupted by joining the board of the company.

One of Mr. Sweezey's associates on the board is Arthur C. Hastings, who has had a life-long connection with the pulp and paper industry in the United States and Canada, and who was for many years president of the American Paper & Pulp Association. The chairman of the executive is A. M. Irvine, who became well-known in the position of manager for Eastern Canada of the Hudson's Bay Company for many years, in which capacity he was responsible for the Allied purchases in this country during the war.

MR. A. M. IRVINE

The Bay Sulphite Company was known originally as the Ha! Ha! Bay Sulphite Company.

Organized in 1916 by Sir Frederick Becker, this company is, in reality, a development of the war, as it was really created at the request of the British Government in order to increase the supply of sulphite pulp from within the Empire, and thereby help to make the British paper mills—and hence the newspaper publishers independent of supplies from Sweden.

The Bay Sulphite Company has added another very successful year to its unbroken record of earning power since it first began operations in 1918, the average net earnings, after allowing for maintenance and depreciation, amounting to nearly $600,000 per annum. During the past five years, it has increased its annual output from 28,000 to 40,000 tons. Unlike the majority of Canadian pulp mills, practically the whole of its output is exported to Great Britain and France under an advantageous contract that has been entered into with Sir Frederick Becker and his associates.

NEW BATHURST MACHINE

It is expected that the first machine will be turning out paper by June next at the new plant of the Bathurst Company, recently financed by the sale of bonds. Work was started in October last and excellent progress is being made. The initial capacity of the mill will be about 55 tons daily and provision has been made for a further extension to manufacture 110 daily.

NEW BRUNSWICK NEWS

The Bay of Fundy port of Digby is expected to be one of the most important shipping centres in the maritime provinces during the coming spring and summer. Last spring and summer and into the fall Digby was utilized to some extent as a pulp exporting port. But the volume of shipments is expected to far exceed the last year's total, during the current year.

Most of the pulp will be shipped to English ports, and at least one steamer per week will load pulp at Digby during the spring and summer, two thirds of the pulp being destined for the United Kingdom. Some of the steamers like the S. S. Domira which recently left Digby, bound for Preston, England will load part of the pulp cargo at St. John and also load some deals, and will then cross the Bay of Fundy to Digby to complete the loading of pulp. The S. S. Domira on its most recent trip out of the Bay of Fundy carried 3,316 tons of mechanical pulp.

On the return trips from England the steamers, at present are mostly carrying coal, for delivery at St. John and Halifax. The Keyingham and Gyp are with the Domira, making regular trips to and from Digby and English ports. The Keyingham carried 5,400 tons of pulp on its latest trip out of Digby. Much of the pulp shipped out of Digby is produced at the pulp mill in Weymouth.

Other ports looking for increased shipments of pulp out of the maritime provinces to British ports, during the present year, are Chatham, Bathurst, Shelburne, Yarmouth, St. John, St. George, St. Stephen. In the case of the port of Bathurst the piers are privately owned, namely by the Bathurst Company Limited, owners of a large pulp mill which is now being enlarged, and a paper mill which is now under construction at Bathurst, adjacent to the paper mill. The steamers leaving Bathurst for the United Kingdom will carry not only pulp and paper but lumber, principally deals. In some of the ports repairs are being made to the piers in expectation of increased pulp shipping trade out of the maritime provinces during 1923.

HANDLE PULP TRAFFIC

Projects for the handling of pulp for New York establishments were discussed at a meeting of the Chambre de Commerce of Sorel, held last week for the purpose of electing officers and discussing general business. Full assurance was expressed that the deep water of the Richelieu river from the St. Lawrence to the terminal at Sorel, could handle the pulp.

The Algonquin Paper Corporation, of which Mr. Geo. McKee is president, expect to get the machine running in their mill at Ogdensburg, N. Y., by July next.

GROWTH OF VENTILATING TECHNOLOGY

An event of considerable interest to the Pulp and Paper Industry is the announcement of the incorporation of the Ross Engineering of Canada, Limited. This took place on Feb. 7th with a Dominion Charter. As an announcement in this issue states this company will give its entire attention and effort to the heating and ventilation and drying equipment for the paper industry. The intention is to carry on in Canada the same work that has been so successfully carried on in the States by the J. O. Ross Engineering Corporation. A little resume of the growth of this industry may be of interest.

Prior to 1910 the heating and ventilation of a paper mill was something that received no special attention. The executives of a mill and the consulting engineer would have certain ideas of how the machine room should be ventilated and other departments heated and ventilated. Most mills experimented until a fairly satisfactory system seemed to be reached. Every mill would find a different solution usually after much trouble and failure. If a system of steam pipes was decided on, a steamfitter would be called in and told to put in so many coils. If a fan system was selected representatives of the fan manufacturers were given plans and specifications on which to figure. These representatives in many cases were heating and ventilating engineers but their field covered all industries, such as textile mills, public schools, foundries, railroad shops, etc. Needless to say their knowledge was general and they were governed to a large extent by the wishes of the mill owners.

It began to be realized, however, by some that the requirements for heating and ventilating a paper mill were entirely different from other classes of buildings and that the experience gained in one mill proved valuable in designing a system for another mill. Certain men began to give more and more attention to designing systems for paper mills alone and finally about that time a department of the B. F. Sturtevant Co. was formed under J. O. Ross to give special attention to this work. A corps of experts were assigned to this work giving most of their time to it in relation to the application of fan systems. These men brought out many improvements for heating and ventilating paper mills for the drying of coated paper and other paper products and gradually covered the entire application of air in the paper industry.

The paper mills welcomed such a department and found that the experience gained in one mill was very valuable in the design of systems for another mill. The demand for this service and work increased so much that it finally led to the incorporation of the J. O. Ross Engineering Corporation, a New York State corporation and an entirely independent concern to engage altogether in the design, manufacture and installation of all types of heating, ventilating and drying apparatus for the paper and pulp industry. This company began operations a little over two years ago, combining the men who had composed the previous paper mill department and many new systems which had been in the process of development were brought out. By being entirely independent of any fan companies it was possible to design and install all manner of systems best adapted to the paper mill work regardless of whether it involved fan systems or not.

Briner economizers for the utilization of the waste vapor from machines for heating the mill was one of the developments of this company operating under exclusive licenses in both the United States and Canada. With a highly specialized corps of experts and with the vast amount of data that had been secured and was continually being secured, important steps in advance were made in the art.

Another notable development was the remodelling of present existing systems. In many cases this was done without the installation of additional heating and ventilating equipment but in the remodelling of distributing systems and in the more scientific application of the system.

Branch offices and shops took care of the various paper mill sections and great progress has been made in new and old installations. New systems and new ideas coming forward were carefully analyzed and when found to be of merit, licenses under various patents were secured and the systems manufactured commercially and developed.

With a notable increase in interest in these various systems in the Canadian mills, and with the great future ahead of the paper and pulp industry in Canada, it was decided to incorporate a Canadian Company to carry on the work throughout Canada. Licenses under Canadian patents were acquired by the new company which was incorporated on February 7th as the Ross Engineering of Canada, Limited. The headquarters are in the New Birks Building, Montreal. The Company is to operate as a strictly Canadian concern, the engineering and construction taking place entirely in Canada, Canadian material being used throughout. The benefit of the experience of the J. O. Ross Engineering Corporation however, is at the disposal of the Ross Engineering of Canada, Limited and with a complete interchange of ideas and advice it presents an ideal opportunity for the work of the Canadian Co. to prove as successful as the United States concern.

T. J. Higgins, formerly with the J. O. Ross Engineering Corporation is in charge of the Montreal work and Canadian paper and pulp mills will secure the benefit, not only of having the work and equipment built in Canada but designed and erected by local men. In addition to handling and installing all sorts of heating and ventilating and drying equipment, the following special systems are handled exclusively by the Ross Engineering of Canada, Limited. "Briner" economizers, "Sturtevant" vapor absorption systems, coated paper and wall paper dryers, "Case" enclosed festoon dryers, vapor water heaters and [illegible] blend unit heaters.

HELLO! LA TUQUE

Quebec's furthest north telephone line had just been completed. Manager Webber of the Bell Telephone Company announced that the Brown Corporation have just finished the construction of a copper metallic circuit from La Tuque to Grand' Mere, connecting at the latter point, with the Bell System. This 70 miles of line built under the supervision of experienced telephone men, will make possible a good standard of long distance service with La Tuque from practically any point on the Bell or Connecting Systems.

The rate for a 3-minute talk from Montreal to La Tuque on the station to station basis is 90c.

British Trade News

From our London Correspondent

London, March 5, 1923. — It is hoped that Canadian paper makers will not allow the question of the Australian preference for British newsprint to become dormant, or fade away through the exigencies of time for the want of keeping it revived. The question must be threshed out with the Australians at all costs, for, it must be remembered, the very people who shouted after the war "Trade within the Empire" in their nervy condition are the very people who took the first available ship to the Antipodes and helped to fix up the preference to Canada's detriment. It is a blow below the belt. Oil on the troubled waters is being poured out by some Australians now in London. They say that in the near future Canada will have an opportunity of being placed in the tariff list on the same footing as the British papermakers and the British papermakers are beginning to see red, if this policy is brought about. Why should not Canadians and British have the same privilege of competing in the Australian market? They all belong to the same Empire and one is as good as the other. But here is the difference

Wrappings, £10 a ton on foreign products and £8 on British.

Newsprint, £3 a ton on foreign and British product free of entry.

Boards, 40 p.c. on foreign and 25 p.c. on British.

Writing paper, 15 per cent on foreign and 5 per cent on British.

This is the preferential tariff in Australia and it will be seen that Canada, which is an integral part of the Empire, is placed in the same category as, say, a foreigner. The whole tariff is ludicrous from an Empire's point of view and if protection was wanted it should have been adopted as an all round tariff instead of making fish of one section and flesh of another section of the Empire as a whole.

How Not to "Play the Game"

Beyond the British sellers of paper in Australian markets, the feeling amongst all classes on this side of the water is that Canadians and British mills should be treated alike. The very men who worked day and night to secure the preferential treatment for British newsprint are the men who are afraid to come forward in London and take advantage of the Safeguarding Industries Act to protect the British mills; they are afraid to face the music and still they will urge Australia to take up a course, which they dare not approach within arms length in the Capital City of the Empire. "Trade within the Empire!" What a fallacious slogan! No Canadian should rest contented until this wrong is put right and there is no use anyone contending that Australians do not understand Canadians and Canadian conditions, because they do. British papermakers and British travellers have already attended to that part of the question and they have left Australia well secured for their own ends.

During the past six months the Press has tried to explain the reasons why Australia acted as she did. Born Liberals and Tories expound their views; but few of them refer to the cunningness adopted in bringing the preferential tariff into existence.

The time is now ripe for Australians to play the game and give Canada the same privileges as the British. Why should they differentiate? If Australian troops and Canadian troops are good enough to fight the common enemy on the same battlefield, surely the two governments are good enough to fix themselves to trade freely with each other? Australia will benefit by an interchange of trade.

"Bluff" in Australia

If Australia is going to hang her hat up in London for newsprint, may Heaven protect her. Londoners and those users of paper in the provinces want Canadian paper and pulp; they ask for it. If it is good for the English printer surely it is good for the Australian, where printing has not yet reached its zenith —either from a journalistic or practical printer's point of view. If the British papermakers have got a grip on the Australian users of newsprint in a financial scheme, we have a horse of another color. But it is doubtful in most cases. The Australians have been "bluffed" into this preferential tariff and if they want relief they must throw the door open to Canadian papermakers in the same way as they have for the British papermakers.

Lord Northcliffe's Millions

Viscount Northcliffe's estate was sworn this week by the administrator pendente lite at £2,000,000 so far as can be ascertained while the executors have sworn it at £3,250,000. These are the exact figures, as at present ascertained, and they are furnished by Messrs. Russell and Arnholz, Solicitors.

Lord Northcliffe was not a director of the Imperial Paper Mills Ltd., in Kent. The fact is now made known and this being so the directors do not enjoy a share of the legacies like some of those in the Anglo-Newfoundland Development Co., Ltd.

Useful Papers

The Canadian Technical Association will be interested to learn that the British Papermakers Association has now issued technical papers on the following subjects: Composition of Commercial Sulphate Pulps; Power Consumption of Fourdrinier Machines; Rubber Latex in Paper; Wet Beating; Dyeing with Lake Colors; and Problems in Rosin Sizing.

Paper Prices

Conditions in the British paper industry are on the whole very fair considering the depression in Europe. Newsprint is selling at a fraction over 4 cents per lb.; M. F. printing paper is a fraction over 5 cents, with seconds at 6 cents and fines at 6¼ cents. Fine white pulp boards are 8¼ cents per lb. S. C. printing paper, (second quality) is passing at 6 cents; coated art (No. 1) at 14 cents and No. 2 at 12 cents per lb. Glazed colored printing paper is about 6 cents a lb.

Swedish Pulp Lockout

The Swedish pulp mill workers are still out and there seems to be no signs of a settlement. A settlement between the paper mill owners and their workers, has been agreed to. But the pulp producers are losing money through the dispute and supplies for the English market are down to the smallest minimum. Swedish paper mills provide their own pulp.

Speakers who have already accepted invitations to places on the program at the Paper Industries Exposition are Don C. Seitz of the New York **World**, and Dr. R. E. Rindfusz, secretary of the American Writing Paper Company, who will speak on the "Standardization of Bonds and Ledgers."

PULP AND PAPER NEWS

Leonard Hayden, an employee of the Hinde & Dauch Paper Company, 45 Hanna Avenue Toronto, had his hand crushed in a roller while at work in the plant a few days ago. He was removed to the Western Hospital.

With power to engage in business as stationers, publishers and general printers, the Gallagher Printing Company, Limited, of Ottawa, has been granted an Ontario charter with an authorized capital of $50,000. Among the incorporators are F. M. Gallagher, G. A. Conley and A. H. Stirling, all of Ottawa.

The balance sheet of the F. N. Burt Company, which among its varied interests carry on the manufacture of counter check books and paper boxes in Toronto, makes a favorable showing, indicating as it does that profits during the past year were $721,627 as compared with $674,754. President S. J. Moore, of Toronto, in his statement says that the Company has ample working capital with which to handle the excellent business that is being secured. Current assets total $1,557,300 as compared with $1,389,723 for the previous year, although merchandise is slightly less. The total reserves are $2,117,450.

According to figures supplied in Toronto last week by John Desmond, an official of the International Typographical Union, many members of the union had left Toronto during the past three months for cities in the United States, attracted, as was explained, by the high wages and the ease with which they secured employment. According to Mr. Desmond, more the 300 members of the union have left Toronto since the New year. While conditions caused by the strike are in part responsibe for the departure of so many skilled mechanics for the United States, letters from them invariably state they will not return to Toronto as long as present wages and conditions hold in the United States.

Charles Thompson, manager of the Winnipeg wholesale paper house of Kilgour Brothers, was a caller on the Toronto paper trade last week.

The Specialty Paper Mills, with mill at Camden East, Ontario, has gone into voluntary liquidation and the affairs of the company are now in the hands of G. T. Clarkson, official assignee, Toronto. The company have been making light weight specialty papers and book paper, and the mill has a capacity of twelve tons daily. The equipment is three 1000-lb. beaters, 2 Jordans and 1 Rotary; one 88″ Fourdrinier widest trimmed sheet, 72″. The officers of the company are George C. Comfort, president and treasurer Charles B. Wing, 1st vice-president Lewis F. Houpt, 2nd vice-president Wilbur E. Houpt, secretary. It is not yet known what disposition will be made of the business.

Replying to a question in the Ontario Legislature last week, Premier Drury stated that the matter of the lease of power rights on the Abitibi River was still under negotiation and that as yet no decision had been made. The inference from the Premier's remarks was that the matter was reaching a finality.

At a meeting of the inspectors appointed in connection with the winding up of the Wax Paper Products, Limited, a concern that had rather a short life in Toronto, bids were opened for the business but they were not sufficiently high to pay off the bond holders. It was decided by the assignee to call a meeting of the bondholders to ascertain what they would accept and in the meantime nothing further has been done in regard to the disposition of the business. According to the statement of one of the inspectors it was not anticipated that there would be anything in the estate for the creditors. Wax Paper Products, Limited, started up some months ago in Toronto with the claim that they had a secret process which gave promise of revolutionizing the wax paper trade. A series of reverses, financial and otherwise, however, were encountered and an assignment became necessary. Several Ontario paper firms will lose by the failure, although not very largely.

The Samuel-McDermott Paper Company, which has been in business for some months, with office on Bay Street, Toronto, has gone out of business and the partnership has been dissolved. The firm were paper jobbers.

George Winslow, of the Lincoln Paper Mills Company, Limited, King Street, Toronto, addressed the Salesmanship Class of the Typothae on the subject of paper at a recent meeting of the class. Over fifty students were present.

J. G. Gibson, secretary of the Spanish River Pulp and Paper Mills, has returned to Toronto after a brief business trip to Chicago.

R. H. Anderberg of Montreal, eastern representative of Paper Sales, Limited, Toronto, was a visitor at the head office on King Street, Toronto, a few days ago.

Fred W. Snyder, of the Warren Manufacturing Company, of New York, manufacturers of jute papers and glassine, was a caller on the Toronto paper trade last week.

David F. Robertson, General Manager of the Canada Paper Board Company of Montreal, was a visitor in Toronto last week. Mr. Robertson states that both the Campbellford and Frankford mills have orders on hand sufficient to keep the mills running full for a month at least.

The Levis, extensive dealers in rag and paper stocks, Toronto, now have their new plant at 72-74 Don Esplanade in operation. They recently put up a new building which gives the excellent facilities for handling, receiving, shipping and sorting their stocks and when certain other improvements that are being contemplated are put into effect they will have one of the best plants in the country. The new building gives them 20,000 square feet of space and between their Cherry Street building and their new plant on the Don Esplanade they have siding accommodation for 9 cars.

President I. H. Weldon and Secretary S. F. Duncan of the Provincial Paper Mills, Limited, Toronto, were present last week when the first paper at the new mill of the Port Arthur Division of the company was turned out on the new machine in the new mill. The first run was of newsprint and it is stated that the quality was up to the expectations of the officials. The plant will continue to operate on a continuous 24 hour day basis and about six hundred employees will constitute the regular force of the paper department.

The head office of the Mattagami Pulp Company, Toronto, reports that the improvement of the paper market in recent months has been of distinct benefit to the company, which has been thereby enabled to practically wipe out its stock of high-priced wood. Markets for the company's products are developing and no difficulty is anticipated in profitably disposing of its product.

T. H. McDermott, late of the Samuel-McDermott Paper Company, has joined the sales staff of Cameron & Fraser, papers and twines, Bay Street, Toronto.

H. W. Long, who at one time was with Warwick Brothers & Rutter, wholesale and manufacturing stationers, Toronto, has been appointed city traveller for Toronto for the Canada Paper Company in succession to the late George W. Marshall.

The Thompson & Heyland Company, Stair Building, Toronto, who are extensive dealers in pulpwood, will contract this year for 70,000 cords and in a couple of weeks will be making contracts with settlers for supplies. They will buy a large quantity of poplar, which is scarce and for which there is quite a call, with a stiffening market.

Hearty approval of the reforestation plan now available through the Ontario Government, with seedlings supplied for the reforesting or cut-over lands and waste lands was given by the Chambers of Commerce at their annual session in Brantford, Ont.

Archibald Annan, who until quite recently was chairman and managing director of Parson's Trading Company, (Australia) Limited, which position he has resigned to commence business on his own account, has arrived in Canada from Australia and was in Toronto last week. Mr. Annan has already concluded arrangements with some of the leading Canadian paper mills in Canada to act as their agent in Australia, and others are being negotiated with. He has spent all his life in the paper trade and has had wide experience in the various paper markets of the word. The title under which he proposes to operate is Archiballd Annan & Co., Sydney and Melbourne, with offices as paper makers' agents. Speaking to the Pulp and Paper Magazine of Canada in Toronto Mr. Annan said that Australia had undergone a period of serious depression in common with the rest of the world, following the Armistice, which resulted in heavy paper stocks at high prices being left in the Jobbers' hands, but the condition, when he left the country recently, had been eliminated and business prospects were quite bright.

BIRD AND SON'S GOOD YEAR

Bird & Son experienced a good demand for their product during 1922, and wound up the year with substantial profit. This, despite material reductions made in the price of the company's product. Orders on hand now considerably exceed those of a year ago. Net profits after depreciation and taxes were taken care of were $82,479. Dividends on the new issue of 7 per cent. cumulative preferred stock for the last six months of the year were $14,000.

The statement of assets and liabilities shows capital assets valued at $799,875. Against this amount there is a depreciation reserve amounting to $208,138. Current assets at $454,796 compare with current liabilities amounting to $120,248. Inventories are carried at $276,945, and bills receivable at $150,189. Accounts payable total $72,580. A further item not included in the accounts payable total represents bank loans amounting to $30,000.

GARDEN CITY BUILDING NEW MILL

Plans are now being brought to a conclusion for the new mill of the Garden City Paper Mills Company St. Catherines and Merriton, Ont. The first machine to be installed is a 90″ Harper Fourdrinier to make wood and stock papers. These will be of the light weight variety and will include a line of papers that have not hitherto been made in Canada. There will be no duplication in the manufacture of the new lines, and only papers of the highest quality will be made. The Garden City products have earned a very high reputation in Canada on account of the excellent quality of toilet paper, tissue paper, towels, etc. turned out by the company, and these same lines will be carried on.

LOREN H. GARDNER

The new machine will be the first unit of Garden City's new mill, the land and water powers having been purchased some time ago and having laid idle awaiting these new developments. Operations will commence shortly.

These new developments were temporarily delayed on account of the illness of L. H. Gardner, President of the company, who is now spending a well-earned holiday in the South.

Mr. Geo. Chahoon, Jun., of the Laurentide Company, is now on a visit to Florida.

The new book mill of the Provincial Paper Mills, Limited, Port Arthur, started operations last week. The mill was designed by H. S. Taylor, Limited, the machine being supplied by the Dominion Engineering Works, Limited, Montreal.

T. B. Little and Company, 63 St. Alexander street, Montreal, have greatly increased their warehouse accommodation by the addition of another warehouse. This is rendered necessary owing to greater business; the new warehouse will also afford facilities for giving greater service to customers.

The Back River, Montreal, power development in which Mr. J. R. Walker, of Montreal, is interested, has reached another stage by the signing of an agreement between the Quebec Government and the Back River Power Company. The contract for the construction of the dam will be let later. It is estimated that 45,000 horse power will be developed.

UNITED STATES NOTES

With Secretary of Agriculture Wallace and Hugh P. Baker, executive secretary of the American Paper and Pulp Association appearing as first witnesses, the special Senate committee appointed to investigate the wood and pulp problems of the United States began its hearings last week. The investigation, it is expected, will result in the formulation of a new national policy of forest protection and reforestation. The committee, which consists of Senator McNary, chairman, and Senators Moses, Couzens, Fletcher, and Harrison, is operating under instructions to present a report with recommendations for legislation at the next session of Congress. The hearings, which are to form the ground-work for the investigation, will be supplemented by a study of the problem on the part of the committee at the National Lumbermen's convention at New Orleans this month. Later the committee will make an extensive tour through the North and West.

Mr. Baker, speaking at the first day's hearing as representative of the pulp and paper manufacturers, expressed the belief that many lean years,due to the depletions of the raw materials, are ahead of the industry in the United States. The problem of the forests he regarded as entering the economical stage. Spruces and other pulp woods in the future would bring such increased prices, he said, as to make forest conservation a paying business. Mr. Baker gave it as his opinion that one of the reasons for the ruthless destruction of the American forests has been the taxing of lands on the same basis as tillable land and other lands from which annual returns are possible. He suggested that the European plan of taxing the timber when it was cut and leaving the land itself tax free, so long as it was used for forest purposes, would go a long way in the direction of solving the American tree problem. The timber loss due to faulty tax systems, he estimated to be about as great at the losses due to fire. Mr. Baker declared that there is plenty of land in the Eastern States, which if made to produce one-half of one cord per acre per year, would make the United States independent and provide lumber for export. He said that the pulp industry is now at work to find a way to use Southern pine in the manufacture of pulp. This problem, observed Mr. Baker, is being solved. He predicted that the South is destined to be the home of a great industry.

Secretary of Agriculture Wallace informed the committee that the cutting of timber to-day is going on at a rate of four times that of replacement, so that within a comparatively short time the country will be entirely denuded of its forests, except those especially reserved by the Government, unless a broader and more effective policy of protection and reforestation is declared by Congress. Estimates vary as to how long the forests will last, but some competent experts think they will be gone in seventy-five years. Mr. Wallace went into detail, citing figures and other data to show how serious is the situation with regard to the forest problem. He suggested that the committee give careful study to a plan for more liberal and extensive cooperation of the Federal Government with the States for the protection of forests.

Wilson Compton, secretary-manager of the National Lumber Manufacturers' Association, told the committee at the second day's hearing that the chief instrumentality should be protection from fire, and aside from that there should be a large extension of public ownership, both state and national, of forest lands. He said that the extent to which changes in economic conditions elimination of the forests fire hazard, and particularly local taxation, will permit, timber owners desire the opportunity to reforest their lands and thus keep them in private ownership. Mr. Compton said that beyond that point they consider the problem as requiring acquisition of enough land by the State and national governments to meet future public needs for forest products.

The trend toward higher prices is being evidenced in nearly all grades of paper as a result of increased demand since January 1. Book paper has advanced from $5 to $10 a ton since the first of the year; the rise in writing paper varies from $5 to $20 a ton, according to grade. Although the bulk of newsprint has been contracted for at $75 a ton up to July 1 by the majority of manufacturers the tendency in this line is following the advance in other commodity prices toward higher levels. Spot sales are being made as high as $80 a ton.

Current earnings of the American Writing Paper are running at a rate sufficient to cover its fixed charges. The annual report for 1922 to be published within a few weeks is expected to show a deficit of about $500,000 after fixed charges, with allowance for variation according to the way in which depreciation is handled. Operations in the early months of 1922 were about 55 per cent normal. A deficit of half a million dollars last year would mean an aggregate deficit of approximately $2,000,000 for the two years, 1921 and 1922. In 1920 the company earned net profit of $1,688,000, equal to $13.50 a share on its preferred stock.

The Robert Gair Company, manufacturers of paper containers, board and paperboard products, report for 1922 net profits for the fiscal period ended that date, of $162,241.42, after provision for depreciation. The balance sheet shows a capital surplus of $8,335,321, as of Jan. 6, 1922. The company's earnings showed a great improvement over 1921, when there was a net loss of $1,577,207. The profits of 1920 were more than $3,000,000. The sales of the company in 1922 showed an increase of 32 per cent over those of the preceding year.

George C. Bayless, president of the Bayless Pulp and Paper Company of Austin, Pa., died in his home in Binghampton, N.Y. March 5 following an attack of pneumonia. Mr. Bayless was sixty years old. He began business in 1881, manufacturing acid with Bayless & Berkalow, and a year later he became a member of the firm of Bayless & Co., manufacturers of wood pulp. This concern was succeeded in 1893 by the Bayless Pulp and Paper Company.

Marsden G. Scott, former president of the International Typographical Union, died at Colorado Springs March 4.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, March 12. — Taken as a unit, the local paper business is moderately active. The weakest feature is the comparative slackness of the printers, who have had a disappointing season. There has been a want of continuity in employment, a brisk period being followed by a very dull one. In other directions, trade has kept up fairly well.

The mills report a steady number of orders. There is still talk of an advance in several lines, due to heavier costs. Advices from the States are to the effect that quotations have moved upwards, and that in spite of this the demand is brisky in almost every branch of the industry. Canadian companies may follow this lead of high values, although the mills are not inclined to do anything in this way unless compelled to. At the same time they are not willing to go on indefinitely absorbing the increasing cost of production.

The situation in newsprint is without change. While the demand is excellent, it will not be surprising if it decreases to a small extent. There has been a report of a possible rise in price, but this is quite unauthorized. The Companies making newsprint are not inclined to take any action which will disturb the market, which is now in a stabilized condition, especially in view of the new tonnage which is, and will be, available. This will be added to if there is foundation for the report that the Whalen Pulp and Paper Company directors have under consideration plans for the manufacture of newsprint.

Book, writings, bonds and ledgers are in fair request; toilets and tissues show more activity; wrapping papers are a spotty market, with prices unchanged, although the mills are finding the cost of manufacture on the up-grade; while boards are being well bought. The market in most of these commodities is broadening, but it is stated that the margin of profit, so far as the mills are concerned, tends to show a decrease.

There has been an interesting development in connection with the American duty on pulpboard in rolls for use in manufacture of wallboard imported from Canada. Under the new tariff the duty was raised to 25 per cent ad valorem, the same as prevailed in Canada. As the result of representations to our Government an order in Council was passed reducing the rate to 5 per cent for U. S. importations. The American Government in response now announces that the duty on Canadian pulpboard is 5 per cent — thus making the tariff the same in both countries.

With regard to the pulpwood section, there is a very good demand for ground mill at about $37 at the mill. American buyers are looking for a gradual reduction in price as the spring progresses. The usual addition to the supply of water will enable the grinders to resume operations and thus increase the output of pulp. Bleached pulp is selling well; orders are being received in a steady volume, and it looks as if this branch will be active during the remainder of the year. Sulphite does not move to any extent. The lock-out in Sweden continues; Government intervention has so far failed, but a meeting is to be held on the 15th inst., in order to see if a settlement is not possible. If an arrangement is made, operations will probably not be resumed until the beginning of April, by which time it is estimated that about 180,000 tons of production will have been lost, counting from the beginning of the trouble.

The figures of the production of pulp in Canada and the U. S. A., during January 1923 and 1922 give the following results — Mechanical, 207,703 tons as against 182,503 tons; and used during the month 188,557 against 158,868 tons; shipments 13,801 tons against 20,663 tons; stocks on hand Jan. 31, 101,318 tons against 197,443 tons. Sulphite production, news grade, 85,657 tons, a decrease of 0.3 per cent; easy bleaching 13,762 tons, an increase of 30 per cent; bleached, 57,905 tons, and increase of 24 per cent. The stocks on hand at the end of the month were — news grade 30,076 tons, a decrease of 28 per cent; easy bleaching 8,870 tons, a decrease of 73 per cent and bleached 18,614 tons, an increase of 55 per cent — the comparisons being with the figures at the end of January 1922.

Ontario Market News

While the wholesale paper merchants report that March has opened up rather quietly from a business standpoint, the fact remains that the mills are all busy and production is being well maintained with all paper lines finding a ready market. Envelope makers and firms manufacturing stationery and blank books are using large quantities of paper and publishers are placing orders for sizeable tonnages of book papers. Manufacturers of bonds and writings report a generally good demand and the same may be said of tissues, toilets and light weight papers as a whole, with prices holding firm. The printing trade in Toronto and other Ontario centres is somewhat quiet and while the wholesale paper merchants complain of a slight dullness in business it is only in respect to the size of the orders being taken for the various paper lines. These are rather small individually but it is confidently expected that ere the month is far advanced the buyers of paper will resume their customary faith in the future of their trade and buy in larger quantities. It is generally declared that the paper trade is on a firm foundation with a strong upward tendency in prices and supported by a healthy tone throughout the entire paper arena, although for the moment none of the buyers are putting in stocks of any size.

PULP. — The feature of the past week in pulp circles was the easing off in groundwood pulp, the present price being ten dollars below that of last month. It is known that some firms have quoted an occasional lot as low as $35.00 at the mill and sales have been made at from that figure to as high as $45. It is pointed out that a lot of the groundwood mills have no storage facilities and as a consequence are turning the product over quickly at low prices. It is also stated that still further recessions may be looked for shortly. The shutting down through strikes of the Swedish mills has had a tendency to stiffen sulphite pulps somewhat although the ultimate effect on the pulp market in Ontario will not be known for a couple of weeks or so yet, according to well-informed paper men. Bleached sulphite is quoted at $90 to $100 at the mill; unbleached at from $65.00 to $70.00; news grade $65.00 and sulphate $70 to $75. It is stated that practically none of the mills are stocking any pulp at the present time.

RAG AND PAPER STOCKS. — The rag market continues strong and the demand for waste paper stocks is good, although the mills are not disposed to meet prevailing prices. All buying is very close, there being a tendency to hold back in fear of a break in the paper stock market. The following quotations prevail: No. 1 hard white shavings, $3.75 to $4.00; No. 1 soft white shavings, $3.25 to $3.50; heavy books and magazines, $2.25 to $2.50; ledgers and writings, $2.50 to 2.75; No. 1 kraft, 2¼ to 2½c.; newspapers, $1.50 to $1.60; No. 1 mixed papers, $1.20 to $1.25; No. 1 miscellaneous, 1.15 to $1.20; cotton rags, No. 1 white, 3½ to 4c.; thirds and blues, (repacked), $1.75 to $2.00; roofing rags, $1.05 to $1.15; new cotton cuttings, No. 1 white shirt cuttings 9½ to 10c.; fancy shirt cuttings, 5½ to 5¾c.; canton flannels, bleached, 8½ to 9c.; white lawns, 9¼ to 9½c.; blue overall cuttings, 4½ to 5c.; ropes and baggins, No. 1 scrap bagging 75 to 80c.; No. 1 manilla rope, 6 to 6¼c.; mixed strings, 70 to 75c.

GLASSINE AND GREASEPROOF.—Manufacturers of these lines report rather strong competition from across the line, particularly in glassing. Mills are busy, however, and there is a good domestic demand for both lines, with prices holding firm. Packers, biscuit manufacturers, confectioners and patent medicine manufacturers are using considerable quantities and a good all-round business is being done.

NEW YORK MARKETS

New York, March 10. — (Special Correspondence)— Paper mills of the United States are working at a record-breaking rate of production. This statement is made on the basis of the figures included in the Federal Trade Commission's report on the paper industry for January, which show that a new record of paper output was established during that month when a total of 664.553 net tons of paper and board of all kinds was produced by mills of the country. This production exceeds even that of any month during the boom in the paper industry back in 1920, when, it will be remembered, mills operated at capacity for a period of a few months and when a new record of a single month's output — approximately 653.000 tons — was made, and which stood as the record up to the first month of this year.

The report shows therefore that paper manufacturers are at present turning out a larger tonnage of their product than ever before has been manufactured. Judging from all reports, there has been no slackening of operations since January; if anything, mills are running at a livelier clip now than in the initial month of the year, and it would not be surprising to see even January's record beaten in February or March.

January production was far above that for the last month of 1922, showing an increase of no less than

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57,000 tons. The Commission's report shows that the paper mills of the country are operating at a larger rate of capacity than at anytime in their history, and confirms the many reports of marked improvement in the industry that have emanated from manufacturing and jobbing sources during the past several months.

Mill stocks of paper increased during January about 14,000 tons, which, however, was far less than the gain in production in January over December, so that stocks at the end of January were but slightly in excess of an average.

Business in paper continues at a lively pace and of good volume. Consumers are ordering in a steady way, and while most of them are absorbing supplies only as their requirements necessitate, so much paper is being consumed that buyers are kept in the market nearly all of the time. Prices are firm and the trend in practically all cases is upward. Raw material is advancing in a majority of instances and papermakers consequently are finding it imperative to readjust prices of the finished product on higher levels.

After having displayed a declining trend for a time, prices of box boards have steadied and have scored an advance this week. Quotation on plain chip board worked down to as low as $55 per ton f.o.b. New York and on news board to $60 at one point last week, but these prices prevailed only for a day and mills withdrew quotations. On Monday of this week new quotations were issued and chip was quoted at $65 per ton and news board at $70 f.o.b. New York, which prices now obtain, with manufacturers evincing little disposition to sell at less. Demand for boards is on the increase since paper box manufacturers are becoming busier as the pre Easter retail season draws near, and the next month gives promise of being an active period for the board trade.

Newsprint continues firm. Publishers are taking all the supply they have contracted for and frequently are absorbing additional supplies in the spot market. Mills are working at close to capacity and have the great bulk of their output sold ahead. Most of the contracts of publishers terminate on July 1 next, and there are many in the trade who expect the contract price of standard news to be jumped from the present contract level to the transient basis of $80 per ton. Whether or not this will materialize is of course problematical at this time, but there are many reasons to believe that it will.

Book papers are active. Consumers are meeting the increased prices approximating a quarter of a cent per pound without hesitancy and are purchasing in large volume. Machine finished is quoted at around 7 cents per pound f.o.b. New York, with prices ranging a quarter of a cent on either side of this figure, depending on the quality of the paper and the tonnage involved. Super book is quoted at about a quarter of a cent above machine finished, and coated book at from 9 cents upwards.

Fine papers are meeting with a good demand and prices are firmly maintained. Tissues are moving freely, and wrappings continue to enjoy a big sale.

GROUND WOOD. — Despite reports of some weakening of prices of ground wood in Canada, there has been little or no change in the domestic market in the States for this commodity. Grinders in Upper New York State and Maine are reported asking and receiving around $43 a ton at producing points for

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WOOD PULP AGENTS

prime spruce ground wood for prompt shipment, and there seems to be ample demand emanating from consuming quarters to fully sustain prices. Board mills are absorbing mechanical pulp in good tonnage. Also newsprint manufacturers are using ground wood in heavy volume, and indications are that there is a ready outlet for all the supply grinders have to offer.

The Federal Trade Commission's report shows that production of ground wood in January was 23,000 tons in excess of that in the preceding month, and yet mill stocks decreased slightly from 66,393 net tons at the beginning of January to 66,097 net tons at the close of that month. This would indicate that consumption is at a high level. Production in January amounted to 130,297 net tons, against 107,301 tons in December.

CHEMICAL PULP. Reports generally tell of a fairly good demand for chemical pulp. It is easy to see that import arrivals are large, manifests of steamers reaching New York, Boston and other ports showing big amounts of sulphite and kraft, and these supplies naturally are holding the market down somewhat since a good part of the pulp coming in from Europe apparently is landed unsold and importers are obliged to seek a mill outlet for it. No change of note is reported in prices. Quotations are maintained, though it is admitted paper manufacturers in frequent cases are securing pulp at recessions from the figures asked, anyone knowing how to "shop" around the trade finding that he can buy to good advantage in some quarters.

Domestic pulps also are quotably maintained although consumers in a great many cases are neglecting the domestic product while covering their bulk requirements with imported pulp. Production of chemical pulp in the United States in January amounted to 184,537 net tons, showing a gain over the 169,770 net tons produced in December. In spite of this jump in output approximating 15,000 tons, mill stocks increased but 3,500 tons.

RAGS. — Papermaking rags are in a strong market position. Demand is brisk and prices on nearly all grades are on the uptrend. Not only are low grades as used in the manufacture of felt paper firm and in demand, but the higher qualities are moving in large amounts and at rising prices. New white shirt cuttings of No. 1 grade are quoted at 14 cents per pound f. o. b. New York, and it is asserted that not much supply of these rags is to be had at this price, dealers generally wanting a quarter to a half cent more. Old whites have advanced to where sellers ask 6.50 cents per pound as a minimum and up to 7 cents for No. 1 repacked, and around 4.50 cents for No. 2 repacked whites. Thirds and blues are bringing 2.40 to 2.50 cents for repacked and 2 cents for miscellaneous packing, and roofing stock is selling freely at around 1.70 cents per pound at shipping points for No. 1 grade and an average of 1.55 cents for No. 2 packing. It is probable that as spring draws nearer rag prices will recede but dealers contend that it will be fully a month longer before the market can feel the influence of increased collections through the country.

PAPER STOCK. — There is a good deal of talk about waste paper prices being weak, yet proof is not wanting that consumers looking for tonnage lots find it necessary to pay rather firm prices. It is doubtless true that mills well provided with wood pulp at present, are enabled to keep out of the old paper market to a greater extent than ordinarily and therefore exert a depressing influence on prices, but dealers put much stress on the scarcity of old paper and the high cost of collecting same and are doing everything possible to hold up market levels. Not much change has been recorded in quotations this week. No. 1 hard white shavings are quoted at about 4.25 cents per pound f.o.b. New York, No. 1 soft white shavings at 3.50 cents, heavy books and magazines at 2.50 cents, ledger stock at 2.75 cents, and old No. 1 kraft paper at 2.25 cents. Folded newspapers are bringing 1.35 cents a pound at dealers' shipping points, and No. 1 mixed paper 1.10 to 1.15 cents.

OLD ROPE AND BAGGING. Old manila rope holds firm in price and is freely sought by paper mills. Domestic rope is quoted at between 6.75 and 7 cents per pound f.o.b. shipping points, and most sellers want the higher figure. Foreign rope is selling at about 6.50 cents on the dock. Higher prices are reported prevailing on scrap gunny bagging, dealers as a rule asking 1.75 cents per pound for domestic gunny at shipping points. Burlap scrap, however, is slow of sale and is freely obtained at 1.25 cents per pound New York.

LEATHER BELTING STANDARDS

It has been remarked that three things, bought by mill men, have to be taken to a very large extent on the honor of the seller—paints, oils, and belting. The have collaborated in the making up of specifications to be used in United States government purchases United States Bureau of Standards and the Leather Belting Exchange with headquarters at Philadelphia which define for the first time in specific terms the meaning of the term, first quality leather belt.

The tests agreed upon are physical, a matter of tension, stretch and bending.

1. The average tensile strength of five samples of single belt must be at least 3,750 pounds per square inch, and no one sample must have less than 3,000 lbs. of tensile strength per square inch.

2. The five samples, under a tensile stress of 2,500 lbs. per square inch must not stretch more than 15%. A length of belt, ten feet between clamps and carrying a weight sufficient to amount to 750 pounds per square inch of cross section must not elongate more than 6%, which would bring it to 10 ft. 7-2 inches between clamps.

3. The above sample, or samples, allowed to lie on the floor, free of all fastening, for a period of seventeen hours must not exceed a length of 10 ft. 1.6 inches between the points originally ten feet apart.

4. The leather must not show wrinkles (piping) when bent through an angle of 180 degrees, grain side in, over forms which have different shapes for various thicknesses.

These tests which are reasonably simple might well be adopted by Canadian buyers and manufacturers of leather belt.

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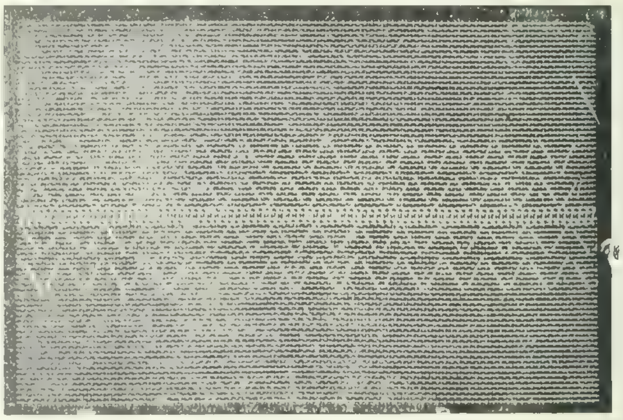

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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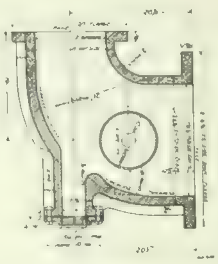

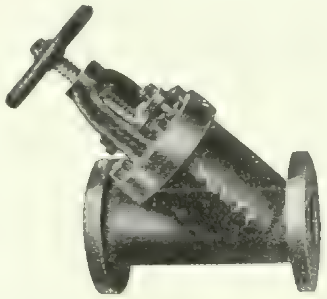

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EDITORIAL

FOR THE PEOPLE

We should like to tell the world, if we could have the ear of that old gentleman for a few minutes, that the greatest opportunity for industrial development today is in the Dominion of Canada. Not only is this country blessed with enormous potentialities in the way of natural resources, but the hopefulness of the situation is increased by the constantly improving attitude of the Dominion and Provincial governments and the working out of more enlightened policies with regard to their developments. This was brought out during the last few days in an address to the Canadian Club by Hon. Honoré Mercier, Minister of Lands and Forests for Quebec on the Quebec policy for leasing water power, and in despatches from Ontario, relating to the apparent conviction of the Provincial government of Ontario that established manufacturing plants should not be starved out of existence because of lack of provision for their necessary raw materials. The Ontario situation will be commented on a little later. At the present, however, we want to call attention to the policy of Quebec as outlined by the Minister.

Mr. Mercier mentioned that the potential water powers in the Province of Quebec are estimated roughly and conservatively at 11,000,000 horse power, and of this amount about 1,000,000 have been developed. When it is considered that the Province of Quebec contains no coal, it will be seen that the saving of an equivalent of 8,000,000 tons, which would be worth in the neighborhood of $80,000,000, is no small item in the economy of our industrial life. We have already commented, in these columns, on the development of storage reservoirs on certain Quebec water sheds, and mentioned the benefit of these works in the line of insuring continuous operation of power plants and mills, and the benefit to the population through continuous employment. We mentioned, also, that these storage dams were yielding an actual return in sale of water, a point that was mentioned by the Minister when he stated that the income from the Gouin dam costing $2,500,000 amounted last year to $212,459. This income was derived from four power companies, and as the power developments on the river increase, the income will naturally increase in proportion.

Mr. Mercier also made a point of the terms on which permission is now granted for the development of water powers in the Province by private companies. Instead of disposing of the power rights outright for a sum which, in most cases in the past, has been considerably less than the value of the property, the policy now is to lease the rights for a long term, a term long enough to give the company an opportunity of making good on the proposition, and with the requirement that development be made promptly. At the expiration of the agreement, the power with its development reverts to the Province, unless the lease be renewed by the company. The lease just signed with the Ontario Paper Company, for the development of 15,000 horse power on the Outardes River, is for 75 years. With a requirement that these developments be started within a certain time limit, it will be seen that there is now an end to the acquirement of water powers by companies who merely intend to hold them as a speculation, and then dispose of the rights. Furthermore, the taking up of a water power lease will depend upon the intention to develop at the same time other resources in the immediate vicinity, which will mean more permanent settlement. In connection with the water powers just mentioned, there was disposed of at the same time by auction 2,000 squares miles of timber limits at a record high price. The stumpage dues are $6.05 per thousand feet and the annual rental of the water power is $6,000. With a pulp mill on the property, manufacturing 100 tons a day, it will be seen that the government of Quebec, and through them the people, will be receiving a very considerable annual income from this property, and this is but typical of many similar contracts that have been and will be made.

A great deal has been said and written with regard to the development of the water powers and timber limits in Quebec and other provinces, but less attention has been paid to the possibilities of industrial development along other lines. The agricultural richness of the Dominion's soil is known over the world, and the quality of the grain, live stock and dairy products are unsurpassed. Canada is the world's greatest producer of cobalt, nickel and asbestos, and is enormously rich in other mineral resources. Developments in the science and technology of electro-metallurgy are bound to react most favorably on the finances of our Provinces and on the prosperity of our people. The rate at which this metallurgical development takes place will depend, to a considerable extent, on the interest that the Provincial governments take in the matter, and the amount of assistance that they give to the promotion of proper methods of exploitation. We feel that insufficient attention has been paid to these other lines of development by some Provincial governments, and would recommend that with the very creditable and commendable plans for development of water powers, which are now in operation, particularly in Quebec, the government should encourage, to a greater extent, the development of our mineral resources, so as to provide for a maximum of employment of the population, and a maximum utilization of the water powers as they become developed.

To our minds, the Quebec plan of control of the development and retaining of the ownership of natural resources so as to have a continual source of return to the people, is the ideal way of administering public property, and is far in advance of any of the hair brained schemes for government ownership that have been tried in the balance and found wanting.

MORE ABOUT ARGHAN

What a purblind beast humanity is is demonstrated by the history of pineapple fiber, which is what arghan really is. The cultivated pineapple in the Philippines is used in the hand production of that lovely delicate fabric known as Pina cloth. Its cousins in Mexico, Central and South America have provided fiber for all the needs of the savage residents in those tropic jungles for unknown centuries. It was brought before the Royal Society of Arts by E. G. Squiers in 1860. Spinners at that time pronounced it equal to the finest flax, which, by the way, it isn't. But it is nevertheless the strongest of all fibers, takes dyes to perfection, resists the decaying effects of dampness, has a brilliant luster and in all probability will soon take its place as a common necessity of life.

The leaves are six to nine feet long, three to four inches wide at the butt and the fiber running the entire length of the leaf is divisible into ten thousandths of an inch. Along the edges of the leaves, 'ala century plant, are many hooked thorns pointing both up and down and making the dense jungles which constitute the home of the plants impenetrable. There exist hundreds of thousands of square miles of these jungles only waiting to be harvested in the south of Mexico, in Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Ecuador, Venezuela, the Guianas, Peru and Brazil. It is not necessary to wait years for Malayan plantations to develop to maturity for a huge supply of this material but what was essential was a suitable mechanical decorticating machine and such a machine was invented by an American in 1918 and widely reported in 1920. The Tropical Fiber Corporation, an American company, has built already more than a hundred of these machines and is going ahead with greater numbers.

With cotton condemned to costly insect warfare and a new fiber in the civilized world at a price of six or seven cents a pound it is quite within the possible the spinning of long vegetable fibers will be taken from its low position and thrust at the head of the class for the attention of the capital and inventive ability of the world. And when that happens Canada can go into raising flax in earnest.

PULP & PAPER MEN APPROVE PROVINCIAL SCHOOL

Several matters of interest were decided upon at a meeting of the Executive Council of the Canadian Pulp and Paper Association held on March 15th in Montreal.

The question of the paper making school proposed to be established by the Quebec Government was discussed, Mr. G. Piche, chief forester of the Government, explained in detail the objects and aims of the school, pointing out what were, in the opinion of the government, the advantages to be received from the school. The Council decided to endorse the scheme, and appointed the following committee to co-operate with the Lands & Forests Department: Messrs. G. Carruthers, J. A. Bothwell, F. A. Sabbaton, J. Stadler, C. R. Whitehead, J. N. Stephenson and E. Beck.

The association will be represented at the Imperial Forestry Conference to be held in Ottawa during the summer, by Mr. Ellwood Wilson of the Laurentide Company, Limited. Mr. Wilson was empowered to appoint his own associates.

The Council endorsed a resolutioin on oleomargarine passed by the Canadian Lumbermen's Association at its annual convention held in Montreal in January last. The resolution reads:

"Whereas oleomargarine is a "Canada Approved" food and is healthful, nutritious and palatable, and whereas oleomargarine is manufactured daily and sold fresh is a sweet wholesome and economical food and our experience proves that oleomargarine has excellent keeping qualities and is suitable for the purpose, and whereas the British Government recently made a thorough dietetic revision of the menu for the British Army and Navy and prescribed oleomargarine as the official spread for the bread.

Be it resolved that the Board of Directors of the Committee of the Canadian Lumbermen's Association respectfully and earnestly urges the Right Honorable, the Prime Minister and members of the Dominien Government to enact permanent legislation pertaining to the manufacture and sale of oleomargarine in the Dominion of Canada so that the Canadian people will not be deprived of a healthful and nutritious food which is at present manufactured under the Inspection of the Dominion Government."

The sum of $1000 was voted the Woodlands section to assist the development work of that section.

The Council also decided to send to the Government a protest against the proposed removal of the Forest Products Laboratories from Montreal to Ottawa.

WILLIAM SHEAHAN

M. Sheahan is widely known as the inventor of the Sheahan rope carrier for threading paper over the dyers of a paper machine. Until about a year ago, he was general superintendent of Pacific Mills at Ocean Falls, B.C. He had a very wide experience, held man responsible positions and was universally liked.

Technical Section Proceedings

Minutes of the Annual Meeting 1923

The Annual Meeting of the Technical Section of the Canadian Pulp and Paper Association was called at the Ritz-Carlton Hotel, Montreal, on Wednesday and Thursday January 24 and 25, the Chair being occupied by Mr. O. F. Bryant. Mr. Edward Beck, Secretary of the Association, and Mr. J. N. Stephenson acted as Secretaries.

Wednesday January 24 — Morning Session

The meeting was called to order at ten a.m. The Minutes of the previous annual meeting were read by Mr. Beck.

Upon motion, the minutes were approved.

CHAIRMAN'S ADDRESS

MR. BRYANT: Gentlemen, you will notice that the next item on the program is the Chairman's address. We are very fortunate in having with us Mr. H. F. E. Kent, Vice-President and acting President of the Canadian Pulp and Paper Association, and I will ask Mr. Kent to speak to us for a few minutes. This morning, when I asked Mr. Kent to open the meeting with a short address to the Section, he was not particularly anxious to do so. He complained that he hadn't prepared a speech. I told him not to worry, I would be very glad to give him my chairman's address and he could read that. So Mr. Kent will now give the chairman's address.

MR. H. F. E. KENT: Gentlemen, your Chairman neglected to give me his address. However, I am pleased to be with you. I regard it as an honor to be asked to say something to you and I would like to have had something prepared so that I might have been able to give you something to think about. It has been my pleasure to attend these meetings for the last eight years. I have not always attended all the technical meetings but I have always read with a great deal of interest your reports. The industry, as you know, has grown greatly in the last ten or twelve years and this is largely due to the efforts put forth by the technical men and those associated with them. We quite appreciate the fact that we must have technical men and we also know that we must have practical men associated with us if we are going to get results. I heard a gentleman speaking the other day about the future and he said that we must have 100 per cent efficiency but that 100 per cent efficiency was of no use on this earth unless we had vision as well. We look to our technical men for vision while at the same time working out our practical problems. I am pleased to know that we have before our meeting a proposition to engage a research director for the industry. I hope we will be successful in getting this through and that we will get a man who will help to build up our industry and make Canada what we all hope it will be, the greatest paper-making country in the world. I wish you every success and I hope the record of the future will be as satisfactory as that of the past few years.

MR. BRYANT: I am sure we thank Mr. Kent for his remarks and that we appreciate his recognition of the efforts of the technical men in the industry. We shall now pass on to the reports of the Committees and I will ask for the report of the Secretary.

FINANCIAL STATEMENT

MR. BECK: This is merely a financial statement of the affairs of the Section prepared up to January 1, 1923, and approved by our auditors, Messrs. Sharp, Milne & Company. The statement is as follows:

CANADIAN PULP & PAPER ASSOCIATION, TECHNICAL SECTION

Statement of Revenue and Expenditure for 1922

1922.

Jan. 1 Balance in Bank			$ 501.89
Dues paid 1922		$1,337.50	
Assessments for Summer Excursion		1,461.13	
Bank Interest		17.40	$2,816.03
			$3,317.92
Expenses Summer Excursion....		$1,497.32	
Stenographer's Salary		300.00	
Magazine Reports & Abstracts..		217.04	
Entertainment		197.00	
Prizes for Essay Competition....		175.00	
Reporter's Fees and Lantern Hire		132.50	
Postage		43.30	
Office Supplies		13.88	
Magazine Subscriptions Refund..		10.00	
Bank Charges	11.23		
Less premium on N. Y. funds	4.01	7.22	$2,593.26
Bal. in Bank, 1st Jan., 1923......			$ 724.66

ESSAY COMPETITION

MR. BECK. I also have to report that while the Section, at the last annual meeting, made no provision for an essay competition this year, several young men, undergraduates and others, who were employed in the mills during the summer, made enquiry as to whether essays descriptive of what they had been doing during the season would be received. I advised them that I felt sure the Section would be glad to receive essays and to make such recognition as they might deserve. I have received two essays, one from Mr. Frederick Bradshaw, who spent the summer at the Kenogami mills and the other from Mr. George M. Dick, a third year McGill man. Both of these essays show extraordinary care in their composition and considerable ingenuity in their makeup and arrangement. I would suggest that these essays be turned over to the Pulp and Paper Magazine for publication, if the editor sees fit, and that the Section recognize the work of the students who have submitted them by, in each case, giving the authors a set of the text books with a letter of commendation for their work. I make that suggestion; I do not know whether it will meet with your approval or not.

MR. BRYANT: You have heard the report of the Secretary which shows that through very efficient management the Section ends the year with about $200 more than it started it. If we can only keep this up next year we may be able to declare a dividend. What do you wish to do with the report of your Secretary?

MR. GEORGE CARRUTHERS: I have much pleasure in moving that the report of the Secretary be adopted.

MR. CROSSLEY: I beg to second the motion.

Motion agreed to.

Mr. E. B. WARDLE: What are we going to do about Mr. Beck's suggestion with regard to the students' essays?

MR. BRYANT: That will come up under the head of New Business.

REPORT OF EDUCATION COMMITTEE

MR. T. L. CROSSLEY: Mr. Chairman and Gentlemen, I think you have in your hands the printed report of this Committee, and, with your permission I will just read it as it is: (This report was printed in the 'Pulp and Paper Magazine," Feb. 1, 1923.)

I have much pleasure in moving the adoption of this report. In doing so I would like to draw your attention to the classification of the men who have become students in this Correspondence Course. I may say that so far only about one third of the mills have been visited; it has been impossible to get in touch with more than one-third of the mills up to date. The number of students and their occupations is shown by the following statement.

Occupation of Students

Paper Machine Helpers..	24
Paper Machine Tenders..	15
Machine Tour Bosses....	3
Back Tenders ...	14
Boss Finishers....	[illegible]
Finisher	1
Wet Room Foremen......	3
Office Staff ...	12
Grinder Room men......	7
Grinder Room Foremen..	5
Acid Makers	3
Chemistry research and control Departments...	12
Coating Machine Helper	1
Foreman Kraft Dept....	1
Sulphite Superintendent	1
Drafting Dept	1
Spare gang	1
Superintendents	2
Millwright	1
Maintenance of Recording Instrument........	1
Manager, Lands and Forests	1
Sulphite Cook...........	1
Core Maker.............	1
Electrical and Hydraulic Operator..............	1
Assistant Engineer......	1
Grinder Room Superintendent	1
Groundwood Asst. Supt.	1
Sales Department...	1
Purchasing	1
Time Keeper............	1
Apprentices.....	2
Bleach Maker............	1
Beater Engineers.. .	2
Beater Helper............	1
Paper Mill Superintendents	4
Winder man.............	1
Superintendent Fire Protection....	1
Screen Room	2
Calender Helper.........	1
Assistant Supt...........	1
Press Men...............	2
Manager.................	1
Asst. Mill Manager......	1
Chief Engineer..........	1
Unclassifiable	3
Total	148

That accounts for 148 men. We have since reached a total of 170 and we have a few in some of the other departments. You will see that the usefulness of this course has appealed to a wide range of men, or men coming from a wide range of positions, and I think that is one of the best possible endorsements of the policy of putting this course into operation.

Word has been received from Wisconsin and from Massachusetts regarding the status of their educational work in the Pulp and Paper Courses. The extension division of the University of Wisconsin reports that they had an enrollment, on January 17th, of 60 students. Of these 39 are members of a study class organized in the three adjoining Wisconsin, Nekoosa, Port Edwards and Wisconsin Rapids. This is a very live mill centre, as our chairman can testify, and the management of the local mills have taken a keen interest in educational matters. The class meets weekly and discusses the current assignments under the direction of a representative of the University. The work is completed by the men after the class hour and papers are forwarded to the extension division of the University and are graded by members of the Laboratory Staff. Of the remaining 21 students, 10 are residents of Wisconsin, 3 of New York, 2 of Illinois, 2 of Minnesota and one each of Ohio, Indiana, California and Maryland. No students have been enrolled as a result of active solicitation by the extension division. It is understood that the work referred to is based solely on Volume III and later Vols. IV and V of the textbooks, and that when a student wishes instruction in other subjects he is required to enroll in the appropriate class.

I may say in connection with that statement that in addition to those students in Wisconsin, we have, under our Correspondence Course here in Canada, 8 students in the United States, so that there are 68 men in the United States studying the course laid down in our text books. You will note that the Courses started by Wisconsin University are based on Volume III and that if students wish to have the instruction contained in Volumes I and II they have to enter in other classes. Our system takes a student right from the commencement through the whole industry in a systematic manner.

While Mr. Kent was speaking I was very much impressed with the statement that he made that we must have cooperation between the technical man and the practical man. This is the method by which we are going to bridge this gap. If we have men in all ranks in the mills studying the work in this systematic way we are bound to find that eventually when they are all talking the same language, there will be a better understanding and greater cooperation between them.

MR. BRYANT: You have heard the report of the Committee on Education and I am sure you will all agree with me that this Committee have done a large amount of work during the year and that their efforts are to be highly commended. It has been moved by Mr. Crossley that the report be adopted.

MR. ANDERSON: I have much pleasure in seconding the motion.

Motion agreed to.

Discussion of Report of Education Committee

MR. J. J. HARPELL: Will there be another opportunity for the discussion of educational work? It seems to me that it would be too bad to pass it over without giving the members an opportunity of knowing how the work is progressing. I suggest that such a discussion would be of considerable assistance to those who are conducting the Course and I am quite sure it would do a good deal of good all round to have a discussion on the report of the Education Committee.

MR. BRYANT: I think that is a very good suggestion and that there is no time like the present for commenting on the report. If any of the members who have had experience with the Course in their mills will give us the benefit of that experience we will be very glad. Mr. Crossley, could you suggest anybody to call upon?

MR. CROSSLEY: I was going to make a few preliminary remarks that might open the subject up a little, seeing that I have been around among the mills. There is only one line of action that seems to produce good results in the time usually at the disposal of those who make these visits and that is to get into direct contact with the men in the mills. We have tried addressing meetings and we have tried visiting individuals at their homes but it has been found that neither of these methods produces results at all commensurate with the expense attached to that method of carrying on the work. The only course that produces results which are at all satisfactory has been for us to go into residence in the mill towns and visit the men in the mills and in the course of their work. That means that the management must have confidence in us that we shall know enough not to interfere with the operation of the work and it also implies, or should imply, that if there is a little bit of interruption it is no more than the price that should be paid for a great deal of improvement in operation and that any little interruption that may be caused now will be more than offset hundreds of times over by the results that will be produced by this work. These are just the points that occur to me and they may suggest some line of thought to someone else at the meeting and bring out some views that should be expressed.

MR. CARRUTHERS: In view of the fact that the industry may not be familiar with the magnitude of the task that has been undertaken by Mr. Harpell and his colleagues, I believe it is proper that something should be said by way of appreciation of the enterprise of these gentlemen who have undertaken to teach the theory of Pulp and Paper making by correspondence instruction. I happen to have had a rather extensive experience in the correspondence school business and, speaking from this and experience of some of the larger correspondence schools, it has cost over fifty per cent of the entire revenue to put the business on the books and make the collections. There may be those who feel that the industry has done a good deal towards helping this movement along without charge and here is a company that proposes to make money out of it. For this reason some members may be a little lukewarm towards this correspondence aspect of the business. I believe I can safely say that Mr. Harpell will not likely make any money out of this enterprise until he gets four or five additional courses of instruction.

I think this industry in Canada should feel deeply appreciative of the enterprise of these gentlemen and I am sure that it is a great comfort to all who are interested in the future welfare of this industry to realise that there are now nearly 250 persons in Canada and in the United States, who are studying the pulp and paper business without the necessity of leaving their present positions. It is a good work and I am sure that Mr. Harpell and his colleagues are entitled to our wholesouled cooperation. In view of the fact that Mr. Harpell is here, I hope he will not mind giving us a general idea of his financial problem. I would like him to make a few remarks in regard to the proposals that have been made with a view to continuing the work. We know what he is charging, we have no idea of what it costs him, and if he would express his views on the point which I have mentioned, it might help some of those present to understand at least the nature of the financial problem that confronts him.

MR. BRYANT: I think that is a very good suggestion, and I take a great deal of pleasure in asking Mr. Harpell to say a few words to us.

MR. HARPELL: Mr. Chairman and Gentlemen, I want to say that the experience we have had in this work has been very pleasant and enlightening. I have had the opportunity of doing a good deal of personal soliciting in the mills and it has been a source of some pleasure and a considerable amount of information to me. To one who is interested in the welfare of boys and who is also interested in pedagogical work, it is very interesting and instructive to go into a mill and talk to those men and boys who have neglected the opportunity of getting an education that their work demands it. We have little or no difficulty in approaching a man or boy to persuade him that he should have more education in the very work that he is doing. That is the first step and that is a step that is very easily taken. The next step is not so easy and that is to persuade him to apply himself and get on.

As we know, with present-day facilities, any man or boy can get pretty nearly all the education and learning that he wants if he makes an effort and puts his time on it. There are books sufficient for him in almost every line and it simply means a little application and perseverance. I find that most men and boys have the conviction that the only place to get an education is in the school and that it is not possible for a person to get an education outside of it. If you study the history of education you will find that that impression or feeling on the part of workmen has grown up as the result of the development of the intramural courses of instruction. There was a time when our universities in all the English-speaking countries were not very prominent and did not occupy a very conspicuous place in the mind of the average citizen, but the last twenty-five or thirty years has made a big difference in that respect and to-day our educational centres in almost every country are very conspicuous so that the average workman feels that if he leaves school without getting a proper education it is not possible for him to do so afterwards. That is a big mistake and we have very little difficulty in pointing out to the boy the number of men who have made a success of life by self-study and also a great number of men who have made a failure notwithstanding that they have had scholastic training. As soon as they are convinced of the value of selfstudy they are interested.

The next step that we have to take is possibly the most difficult and that is to persuade him to come across with the amount that the Course costs. The price is $125 paid in advance; $135 paid $20 down and $20 a month, or $145, paid $10 down and $10 a month.

As the disposition has grown up during the last twenty or twenty-five years to believe that education must be had in the schools and cannot be had elsewhere, there has also been a growing disposition on the part of the boy, and particularly in our works and factories, that he should not spend any time on study but that he should spend his whole time in other ways. The boy that spends his whole time in other ways is generally spending every dollar he has and living up to his salary. That is what we find to a great extent — I think more so to-day than possibly ever before. Boys to-day are living far beyond what they are getting and irrespective of what they are earning. Some of the best paid boys today are very heavily in debt and it is only when you come in contact with them and discuss these matters with them and get their confidence that you realise the situation in which they are placed.

Some of the mills have helped us very materially in this matter. We cannot very well change the conditions that have been laid down for us by the Committee in the way of working. The terms of the contract have been accepted by us and we cannot very well change them but the mill can. The mill can show the boy that they have an interest in his studies and in his welfare. If the mill will only undertake to collect from him in smaller amounts than we can accept the difficulty as to the payment of the fee can be very easily overcome. Suppose the mill undertakes to make a cash payment, the boy having paid $20 or $10 on his course. If the mill collects in small amounts from the boys, say $2, $3, $4, $5, or $6 — I do not think in any case it will be necessary to collect less than $5 — it will be of great assistance and encouragement to the boys and it will involve no expenditure on the part of the mill.

Another matter has been dealt with by the Chairman of the Committee, Mr. Crossley, and that has to do with the facilities that should be given for soliciting students. If we have to visit and pick up these boys in their homes, it is going to be very much more expensive than we can stand and if we have to stand at the gateway or the doorway of the mill, as the boys come out, you can depend upon it that the boys are not going to give very much attention to this question. If the mills have not sufficient interest in this work to at least give the solicitors an opportunity of getting to the boys, and if the solicitors are not respected by the heads of the mills, the boys are not going to give them their respect.

In regard to the cost, we find that it costs us two and a quarter times more to get the business than we had counted for in fixing the fee. We find that up to date we have expended on this work a little short of $10,000, or $9,000 and some odd according to the books of the Industrial and Educational Publishing Company and that our receipts up to date are some $4,000. We have other expenses, as you know. Possibly you do not appreciate all the facts from the report that was read to-day. When it became advisable to translate these books into French so as to enable the French workers in the Province of Quebec to take advantage of this course, there were no funds with which to do it and the Committee did not care to undertake the expense of it. The Industrial and Educational Publishing Company are doing that, notwithstanding that we are quite new to the business of printing technical work and it is costing us a great deal more than it would cost an establishment that is in the habit of printing that class of work. But we are doing it and we are going to continue to do it. I think that five years from now the mills in this country and the pulp and paper industry generally will realise that this is one of the most important works that has ever been undertaken in connection with the industry.

We are apt to forget in our efforts for the development of our natural resources that among the greatest of these are our intellectual resources and therefore this is one of the most important movements that has ever been undertaken in connection with the development of the natural resources of the industry. I think we are going to succeed in bringing to the industry a great many boys who will know something of its practices and processes before they enter the mills. We have not as yet started to do that because, as a matter of fact, we have only been at the work for a very short time. We began on the first of September and we have to get our feet firmly placed, first, in regard to our method of approach and, second, in regard to the conduct of the work itself. About the middle of November we found that the fact that attention was being centered on the Christmas holidays interfered with the work and we did not press it at that time. After the holidays were over we felt that it would be well to mark time until this annual meeting at which the whole subject could be freely and thoroughly discussed.

There are some mills — and big mills too — that have exhibited little or no use for this work. I think they are making a great mistake. We have simply accepted the situation and passed on to other mills. There are some mills that still feel that more use could be made of night schools. That method has been tried in many mills and it fails from two or three important causes. One is the great difference there is in the educational standing of the men looking for information. Another difficulty is that created by the progressive shift, but let me tell you the greatest difficulty of all is the indifference on the part of men who might go to night school.

We went to a little town where there is a night school which is absolutely free and where there is excellent instruction in several subjects. We spent a couple of weeks there and in that two weeks we enrolled more students than were registered at that time in the night classes notwithstanding that these schools are free. The man who wants to study does not take very kindly to going to a night class, sitting elbow to elbow with the newest boy who has come into his deparment and displaying his ignorance to that boy. If he is a married man with a small family it is not easy for him to leave his home and go to a night class because probably the evening is the only opportunity that his wife has to get out at all.

I think it has been pretty definitely demonstrated that the proper course of education for the working man and the mechanic — and when you say mechanic, that means a great deal, because I think those of us who have studied the educational development of the world realise that the progress of the world is due to the efforts of the mechanic more than to those of any other class of men — is correspondence education or self-study.

MR. BRYANT: I think Mr. Harpell has shown us a new angle of this problem of education. He has convinced me of one thing and that is that his organization has taken a very great burden off the shoulders of the Canadian Pulp and Paper Association. I do not believe the Association could have properly handled an educational campaign. I think we will all feel now that we should give Mr. Harpell's representatives every opportunity and assistance when they visit our plants. Is there any further discussion on this problem of education?

MR. W. G. MacNAUGHTON: Mr. Chairman, it appears to me that the importance of the educational work which has been undertaken by the Technical Section is so great that it should engross the attention of the big men in the industry. The big men in the industry are not necessarily those with college training, but they are the men who are the thinkers, who are doing the work in the mills and who have imagination and vision as to the possibilities of the industry. The statement by Mr. Harpell is one that we should take closely to heart, realising that it is not only while he or his representatives are at the plant that the best work can be done but rather by the everyday contact with the men who are interested or who are likely to be interested in educational work. All of us who have been connected with mills know that there are younger men and older men too, who, in their conversation, indicate their desire — perhaps in rather indeterminate and indefinite terms — for further mental training. If we encourage them in conversation we will put them in a better frame of mind to consider the proposition when the times comes. I remember one young man who was about eighteen years old; he was a laboratory assistant and he wanted some knowledge of chemistry in addition to what he could get in his routine work in the laboratory. He undertook a chemistry course in the International Correspondence Schools and it was surprising to see how much more adept he became and how much more interested he was in the different activities and problems of the industry.

Another case was a man who was running beaters when he started. He was a married man with a family, about 35 years of age. He was impressed with the possible value of some chemical knowledge in his work and he undertook a chemistry course with the International Correspondence Schools, at which he worked for about three years. Many times he would be stuck and I told him that whenever he got stuck to come to me and I would help him. I am satisfied that the encouragement I and others gave him resulted in his completing the course. However, the fact that he did complete it was most creditable to him. All the time he was impressing his ability more and more on his superintendent; without the superintendent knowing that he was taking the course, he could see that he was doing his work better. While advancement to a better job is not the invariable reward to be handed out to all men taking a course of this kind, yet the possibility is there. To-day that man is an expert color man with one of the largest and best color concerns in the United States. That shows what a man past youth can do to remove the handicap of inadequate training and specially if he receives the encouragement of those who know a little more than he does.

The point I want to make is that the technical men in the mills must realise that they have a responsibility and that is the responsibility of encouraging and assisting the men who are undertaking this not easy educational work for themselves.

Another very important by-product to the technical men themselves is the mental stimulus which comes to them from contact with those who are trying to improve their education. We must recognize that in most cases paper mills are situated in rather distant localities and except at times like this when men can get away and meet together, some of the technical men feel that they are rather handicapped by their location. The fact that there are men who are being mentally stimulated has its effect upon one's own mind and I would emphasise that as being an extremely important by-product to the technical men in the industry.

MR. BRYANT: I would like to call on Mr. Kellogg for some information on the subject of education.

MR. R. S. KELLOGG: Mr. Chairman and Gentlemen, this discussion has shown very clearly one thing that must by now be apparent to anyone who has any knowledge of this subject; it has proven to us again the rule which we all know but always seem to forget that the only way to have a job done is to make it somebody's business to do it. You have entrusted this work to Mr. Harpell and he has made faster progress with it than most of us anticipated at the start. The results demonstrate absolutely the advisability of making it some person's business to go out and do a certain thing. Nothing can ever be done otherwise; it is only in books and magazine articles that you find things happening without the directing force of personal responsibility. It is not an easy matter to get people to undertake study of this kind and it is not easy to get them to complete their studies when once undertaken unless we make somebody responsible for doing that very thing. It is going through because somebody is interested in making it go through and the right kind of man who has an interest in making it go through can pretty quickly show to your satisfaction that it is worth while for everybody.

We have a statement from Wisconsin that in one little paper-making centre, 39 students are using these text-books in connection with the Wisconsin University extension work. The university extension division offers this course at a very low price. They cannot make any money out of it but will lose money because it is a public institution. It has no interest in going out and inducing a large number of people to take the course because it is not forced to do it. All they do is to offer the course to the public and those who want it can come and get it. There are at the present time 39 men taking it because one or two people in the mills saw that it was a good thing and they took it up. There are centres all over the United States where good work could be done if some of the leading men in the mills, recognizing the advantage that this course is to their men, would encourage them to take it up. But, until that is done, nothing will happen. I think we have cause to feel very much encouraged that we have gone as far as we have. The showing is better than I had expected it to be and therefore I think we have every reason to feel encouraged. But we must all take to heart the simple fact that no job is done unless some one takes hold of it and does it.

I read a very interesting article in the last few days written by one of the prominent members of the faculty of the College of the City of New York. The College of the City of New York has enrolled over 7,000 people the larger proportion of whom are working men and boys from 18 to 50 or 60 years of age. Most of them have to do all their studying in night classes. The statement of this member of the faculty, based on the records of that institution, is to the effect that the old policy or idea that you have to catch a fellow young to teach him anything does not hold true but that, on the contrary, it is proved by the records of the institution that in case after case the fellow who is pretty well on towards middle age has turned out to be, if not better, at least just as good as, the young student in a large number of the subjects taught. It is also the fact that in a great many cases the older man, in addition to what he gets out of the course, has his own experience in the world which is a great advantage to him. Therefore, he goes to his studies with a breadth of understanding and the ability to interpret what is being taught to say nothing of the experience and practical knowledge which enables him to apply it. The conclusion of this article was that it was an utter fallacy to imagine that if you do not catch a fellow young you cannot teach him or, in other words, you can teach an old dog new tricks because in many cases the old dog is better than the young one and can more quickly assimilate and apply what is being taught.

I was interested in noting the classifications of the students enrolled in Canada ranging from those in the lower positions in the mill up to the top. I think you will have reason to expect that some of the fellows in the higher positions in the mills who are taking this course will go still higher in a short time.

In conclusion let me say that I got from the McGraw-Hill Book Company the day before yesterday, the figures of the total sales of the text books. The statement is as follows:

Sales of Text Books

	To July 1, 1922	July 1 to Dec. 31, 1922	Total
Vol. I	792	458	1,250
Vol. II	697	223	920
Vol. III	565	691	1,256
Grand total	2,054	1,372	3,426

When we have Volumes IV and V available, there is no question but that the sales will reach a pretty substantial figure.

MR. BRYANT: Is there any further discussion?

MR. CROSSLEY: There is another point in connection with this matter that might be borne in mind. We have stated that up to date a certain number of students have been enrolled. In addition to the students who have been enrolled, very intimate conversations have been had with probably three men for every student enrolled, so that there is a strong undercurrent of persuasion and explanation going to the men in the mills. If we have forty students enrolled in a mill, probably 150 men have been spoken to and the trend of their minds has been directed into a new channel. When you approach them they bring to the surface the idea that you cannot teach a man to make paper out of a book. That man is not going to volunteer to take the course. He has to be talked with, to be argued with, and the matter has to be explained to him. He has to be shown that our purpose is not to make paper out of a book but to teach him how to prolong his earning power in the industry, how to make more money, how to take more interest in his work, how to be more valuable to his employer and how to get more enjoyment out of life. We know that a man cannot be taught how to make paper except on a paper machine; that has to be taken for granted. But that is the way the conversations with the men themselves begin. You get a man who starts in by saying: "I will talk about your course but I don't think a great deal of it." After talking awhile he will say: "I did not think of it in that way but I guess you are right after all." If you have brought a man to that point of view there has been some missionary work done for this course, and for a better understanding of the opportunities in the industry and obligations that go with them.

MR. HARPELL: There are a number of the mills where the students have been working for several months. In the Abitibi mill we have an enrolment of 36 students. Will not somebody from Abitibi give us their experience? If there is any criticism to be made, do not hesitate about making it. We have a class at the Belgo Paper mill, thanks to the very keen interest that Mr. Stadler took in it, and we have also a good class at the Price Bros'. mill at Kenogami. Will some person from there tell us how the work is going on and the results of their observations?

MR. BRYANT: I do not think that the Abitibi delegation has arrived yet, but I see Mr. Hawkings of Price Bros. and I am going to call on him to tell us how these problems are working out at the Kenogami mill.

MR. C. S. V. HAWKINGS: Mr. Chairman and Gentlemen, it has been my privilege to have charge of the work that has been done in this connection at the Kenogami mill. We started off with 17 members. In the first place, we created a representative committee from the various heads of departments so that we might include in it, advisory members who would be able to deal with the various phases of the pulp and paper courses. We hold classes every Sunday evening when the students have a chance to bring to us their various difficulties and have them explained. At this class we are endeavouring to bring those who are not so advanced as the others, up to the mark in the various mathematical sciences. Then, it is our intention during the year, to have talks by men who are well acquainted with the subjects, in order to stimulate the interest. The company has been good enough to guarantee to all those who have enrolled in the courses a refund of one-half of the total cost of the course provided they complete it to the satisfaction of the Institute and that they are still in the employ of the company. With this at the back of the organization we are accomplishing quite a lot of good work. We have an average attendance of from five to six every Sunday night. Quite a number of those who are enrolled have had some preliminary education, so that at the present time I consider this a very good percentage. Later on we hope to enlarge the class.

The creation of interest in the French class seems to be with us a big problem. It is apparently very difficult to get the interest of the French-speaking members of our organization in this class, but I think that as time goes on and the Institute is enabled to get out the various papers in the French language our success will be greater. We are very well satisfied with the work that has been done, we understand the difficulties that the Institute is laboring under and I think it is to be congratulated upon the success which it has attained so far. I would be very glad to hear from others. We are always open to suggestions in regard to this course and it is only by discussing these various problems that the difficulties are overcome and we are enabled to work them out.

MR. J. N. STEPHENSON: I would like to say to the meeting that some time ago the Secretary asked us if we would prepare something in the way of a definite statement, that there have been requests coming to him from a number of the manufacturers asking that we recommend some standard system that the mills could go by in the way of helping their students. We refrained from doing so for two reasons; in the first place, because there is no common standard and, in the second place, it would not be fair to suggest one. The various mills are in entirely different situations with a different class of men in some instances. Some mills might be able to do more than others. Some mills might be able to enroll a large class in proportion to their employees, others might be able to enroll only a few, so that it would not be fair to ask every mill to contribute the same or to give the same bonus or reward to the students who completed the course. We have just had a very fine instance given us of the most hearty cooperation with, and cordial support of the men in the mill as a result of which those who give their time to educational improvement will receive some reward and there are several examples of this kind. One mill is paying the whole cost of the course; another mill is paying the cash price which it passes on to the men and collects in smaller instalments. It will give a bonus of $25 on the completion of the course. Another mill is going to grant a bonus of $50 on the completion of the course. Other mills are assisting their men by paying the fee to the institute and then collecting from the men in instalments that can be conveniently met by them. There again, that is an individual matter; an employee getting $15 a week finds that $2 or $5 a month is all that he can handle, while another man may be able to handle $10 with ease. We have some paying $20 and we have had some who paid the whole cash price down. Therefore we have refrained from recommending anything in the way of standard treatment as between the men and the mills but we are sure that after having heard the discussion this morning every mill will be prepared to do all it can to help the work along.

MR. HAWKINGS: Would it be possible to obtain from time to time a statement of the progress which has been made by the students. It is very hard to collect this information from the students or to know how the students are answering their papers. We do not attempt to interfere with the answers to their papers at all. I would ask if we might get a report as to this from the institute.

MR. HARPELL: That is a matter that we have overlooked and it will be attended to immediately. We should report regularly the progress which the student is making particularly at a mill where they have the matter so well organized as at the Kenogami mill.

(To be continued)

THE MOTORS WERE MADE BY HARLAND

A slight confusion of names occurred on page 268 of the Pulp and Paper Magazine for March 8th. It was stated there that the motors for the drive of the new machines of the Provincial Paper Mills at Port Arthur were supplied by the English Electric Company. As a matter of fact, these motors were built by the Harland Engineering Company, in their own works, which are located in England, which is evidently the cause of the error.

The Harland Engineering Company are to be congratulated on having the order from Price Bros. & Co., for the electric drive for the two machines to be built by Walmsley & Company. These machines will be 234″ wide, and capable of running up to a speed of 1,000 feet per minute.

A repeat order was also received last week, by the Harland people for a drive for the second machine of the Belgo Paper Co., at Shawinigan Falls. This machine will be 232″ wide and operate at 750 feet per minute.

REGULAR MACHINERY AT PAPER SHOW

The Salesmen's Association of the Paper Industry, which will hold its annual convention during Paper Week at the Waldorf Astoria, is the third of the paper associations to officially set aside a portion of the convention period for a visit to the Paper Industries Exposition to be held the week of April 9th at the Grand Central Palace. The salesmen have changed their customary program to leave the entire afternoon of Tuesday, April 10, free for a visit to the Exposition as a body.

This follows the decision of the American Paper and Pulp Association to hold no afternoon program on the day of its meeting, Thursday, April 12, this afternoon being set aside for the manufacturers to visit the Exposition as a body. The Technical Association of the Pulp and Paper Industry has arranged to hold one of its program sessions at the Exposition, and Thursday afternoon is the time set for this part of the program of the technical men of the Industry.

The interest in the Exposition is shown by the fact that many Canadian paper making students are planning to make the trip to New York to see the whole story of the paper industry as shown at the Exposition. The Institute of Industrial and Domestic Arts, which is conducting special courses in various parts of the paper making districts of Canada, with classes in individual mills, is urging its students to come to New York for the paper show.

The New York State College of Forestry at Syracuse has announced that it is planning to send nine students of the classes in the manufacture of pulp and paper to study the Exposition, in charge of some of the instructors in that institution.

Plans for special days are progressing rapidly. The latest program under way is that of Clean Food Day, and O. B. Towne, secretary of the Waxed Paper Manufacturers Association has been selected as chairman of the special program on the protection of food from filth by the use of sanitary containers.

Three government films have been added to the program for motion pictures to be a part of the Exposition's daily program. The films selected are Forest Service films portraying forest activities which are of importance to the paper industry. One "Winged Guardians of the Forest" shows the method of locating forest fires before they get beyond control by use of the aeroplane. "What Careless Hunters in the Woods Can Do" shows the danger from forest fire due to careless cigarette smokers, whose carelessness last year forced the government to close the pulp wood forest of Quebec to tourists. The third government film is "Winter Logging in the White Mountains", portraying operations in one of the American pulp wood producing regions.

Advices from some of the companies which have secured space in the Exposition indicate that the exhibits will be elaborate and intensely interesting to the paper industry and public as well. Several companies have announced their intention of installing operating models of their equipment. One exhibitor from Ohio plans to ship a carload of equipment, and will use bronze pipes which his company features, instead of the standard railing and partition equipment for the three booths he has secured in the Exposition. A bleaching process company plans to install a model of a complete bleaching equipment, and some of the color houses propose to show not only the pigments, but the crude materials in the process of conversion into colors used in the paper industry.

A partial list of the exhibitors who have so far closed contracts for space in the Exposition follows:

American Writing Paper Company; American Manufacturing Co.; Angel, H. Reeve Co., Inc.; Archer, A. W. Co., Inc.; Albany Felt Co.; Appleton Woolen Company; American Paper Merchant; Armstrong Machine Works.

Bagley & Sewall Co.; Bauer, Ricard; Bird Machine Co.; Booth Chemical Company.

Cameron Machine Company; Cayuga Linen & Cotton Mills, Inc.; Cooper & Cooper, Inc.; Carthage Machine Company; Canadian Ingersoll Rand Co.

Dorr Co. The; Duriron Company, Inc.; Draper Bros.

Electro Bleaching Gas Co.; Enterprise Machine Co.

Farnsworth Company; Foreign Paper Mills; Fredrick Iron & Steel Co.; Flintkote Co.; Forest Paper Co.

Hardy, William A. & Sons Co.; Huyck, F. C. & Sons; Hercules Powder Co.

Individual Drinking Cup Co.

Jenssen G. D. Co.; Jeffrey Manufacturing Co.

Keystone Lubricating Co.; Knox Woolen Company; Kalbfleisch Corporation.

Lewis, J. P. Co.; Lockwood Trade Journal Co.; Lockport Felt Company; Layne-New York Company; Lead Lined Iron Pipe Company.

Mathieson Alkali Works.

Nash Engineering Company; National City Paper Co.; N. Y. Gummed Paper Company; N. Y. States College of Forestry.

Oliver Continuous Filter Co.

Paper Makers Chemical Co.; Paper Makers Importing Co.; Paper Makers Felt Industries; Pequot Manufacturing Corp.; Pennsylvania Salt Mfg. Co.; Purity Paper Vessels Co.; Paper Industry; Paper Mill & Wood Pulp News; Paper Trade Journal; Paper Machine Wire Mfrs. Council; Plymouth Cordage Co.

Ross J. O. Engr. Corp.

Shuler & Benninghofen; S K F Industries Inc.; Sandusky Foundry & Mach. Co.; Sealright Co., Inc.

Talcott, W. O. & M. W., Inc.; Taylor-Wharton Iron & Steel Co.; Twing Instrument Co.

Union Bag & Paper Corp.; Union Sulphur Company; U. S. Bureau of Standards; U. S. Bureau Foreign & Domestic Commerce; U. S. Forest Service; University of Maine.

Voorhees Rubber Mfg. Co.;

Westfield River Paper Co.; Wallace, Jos. H. & Co.; Waterbury Felt Co.; Western Paper Makers Chem. Co.; Williams, C. K. & Co.

FORESTER'S TABLES

O. M. Porter, Secretary of the Woodlands Section of the American Paper and Pulp Association and of the United States Pulp Producers Association is co-author of a compilation of **Forester's Tables** just published as an official bulletin of the New York State College of Forestry at Syracuse, N. Y., H. C. Blyea of the forest engineering department of the College being the other forester engaged in its compilation. Surveyors tables, scalers, tables and volume tables, sixty-six in all, as well as eleven miscellaneous tables are given in the publication which has been issued in convenient pocket size.

Annual Convention of Paper Makers

The annual convention of the American Paper and Pulp Association and allied organizations is doubtless the most important event of the year for our industry. Canadians may well consider themselves a part of it because of the intense mutual interest that is evident on the part of both Canadians and Americans in affairs of industry on both sides of the line. The following program, therefore will be read with great interest.

Persons intending to go to New York for the convention should reserve accommodation **at once.** Also, don't forget to ask for a **certificate** when buying your railroad ticket. If you return the same route you save money; if you don't it costs you no more, but helps hundreds of others.

TENTATIVE PROGRAM OF PAPER WEEK

April 9-12

Monday, April 9

Morning

Name	Room	Time
Technical Association	107, 109, 110	10:00 A.M

Afternoon

Name	Room	Time
Papermakers' Advertising Club	112	12:30 P.M
Book Paper Mfrs. Ass'n.	East	2:00 P.M
Technical Association	107, 109, 110	2:00 P.M.

Tuesday, April 10

Morning

Name	Room	Time
Cost Association	115	10:00 A.M.
Gummed Paper Mfrs. Ass'n	107	10:00 A.M
Salesmen's Association	East	10:00 A.M.
Technical Association	Myrtle	10:00 A.M.
Tissue Paper Mfrs. Ass'n.	110	10:00 A.M.

MR. W. J. RAYBOLD,
President American Pulp & Paper Association

Afternoon

Name	Room	Time
U. S. Pulp Producers Assn.	112	1:00 P.M
Cost Association	115	2:00 P.M.
Cover Paper Mfrs. Ass'n.	110	2:00 P.M.
Gummed Paper Mfrs. Ass'n.	107	2:00 P.M.
Salesmen's Ass'n.	Attend Paper Industries Exp	
Technical Association	Myrtle	2:00 P.M
Vegetable Parchment Mfrs. Ass'n.	109	2:00 P.M

Evening

Name	Room	Time
Salemen's Ass'n.-Banquet	Roof Garden	7:00 P.M

Wednesday, April 11

Morning

Name	Room	Time
Card Board Mfrs. Ass'n.	107	10:00 A.M.
Technical Association	Myrtle	10:00 A.M.
Technical Association	109-110	10:00 A.M.
Waxed Paper Mfrs. Ass'n	McAlpin Hotel	10:00 A.M.
Woodland Section	115	10:00 A.M.
Wrapping Paper Mfrs. Service Bureau	Tea Lounge-Roof Garden	10:00 A.M.
Writing Paper Ass'n.	East	10:00 A.M.

Afternoon

Name	Room	Time
Waxed Paper Mfrs. Ass'n	McAlpin Hotel	1:00 P.M.
Writing Paper Mfrs. Ass'n.—Luncheon	112	1:00 P.M.
Glazed & Fancy Paper Mfrs. Ass'n.	107	1:30 P.M.
Technical Association	Myrtle	2:00 P.M.
Technical Association	109-110	2:00 P.M.
Wrapping Paper Mfrs. Service Bureau	Tea Lounge-Roof Garden	2:00 P.M.
Writing Paper Mfrs. Ass'n.	East	2:00 P.M.

MR. GEO. WILLIAMSON,
President Technical Association, P. & P. Industry

Thursday, April 12

Morning

Name	Room	Time
American Paper & Pulp Ass'n.	Astor Gallery	10:30 A.M.

Afternoon

Name	Room	Time
American Paper & Pulp Association	Attend Paper Industries Exposition	
Binders Board Mfrs. Ass'n.	112	1:00 P.M.
Technical Ass'n.	Program at Paper Industries Exp.	

Evening

Name	Room	Time
American Paper & Pulp Ass'n.—Banquet	Grand Ball Room	7:00 P.M.

Headquarters — Cost Association Room 106
Headquarters — Information Service Room 151

A feature of convention week of the American Paper and Pulp Association will be an address by Thomas O. Ross, president of United States Pulp Producers Association, on paper and pulp conditions in South America. Mr. Ross has just returned from an extended trip and will give first hand observation at the luncheon of the Pulp Producers to be held at one o'clock, Tuesday, April 10.

Pulp producers who are not as yet members of the United States Pulp Producers Association are being invited to attend this luncheon as well as the members of the Association.

T. A. P. P. I. PROGRAM

Following is the program of the eighth annual Convention and Dinner of the Technical Association of the Pulp and Paper Industry to be held in New York, April 9, 10, 11, 12, 1923 at the Waldorf-Astoria Hotel. Throughout this week the Paper Industries Exposition will take place at the Grand Central Palace.

SESSIONS OF CONVENTION

Meetings will start promptly at the time indicated

Monday, April 9, 1923

10:00 A.M. Registration.
Rooms 107, 109, Myrtle Room. Meetings of committees.
12:00 M. Parlor K. Canadian Club, Hotel Belmont
Executive Committee luncheon.
2:00 P.M. Rooms 107, 109, Myrtle Room. Meetings of committees.
8:00 P.M. Smoker for committee members and guests (Canadian Club).

Tuesday, April 10, 1923

10:00 A.M. Myrtle Room. First General Session. Address by President G. E. Williamson.
Report of Executive Committee, R. S. Kellogg.
Report of Secretary-Treasurer, W. G. MacNaughton
Appointment of committee to consider the recommendations.
Appointment of committee on nominations.
Presentation of amendments to the Constitution.
Reports of standing committees in the following order:
Abstracts of Literature and Bibliography, C. J. West.
Cellulose, W. E. B. Baker.
Coated and Processed Papers, Edwin Sutermeister.
Dyestuffs, Ross Camubell.
Mechanical Pulp, W. A. Munro.
Membership, J. O. Ross.
Heat, Light & Power, H. S. Taylor.
Paper Testing, F. A. Curtis.
Soda Pulp, G. K. Spence.
Standard Methods of Testing Materials, H. U. Kiely.
Sulphate Pulp.
Sulphite Pulp, R. A. Hayward.
Vocational Education, R. S. Hatch.
Joint Committee on Testing Pulp for Moisture.
Joint Committee on Felts.
Joint Committee on Paper Drying.
Joint Committee on Wires.
Waste.
Unfinished business.
New business.
2:00 P.M. General Session.
G. E. Williamson, Chairman.
Report of Committee on Waste — R. B. Wolf and George D. Bearce.
Fiber loss in mill effluent.
Brokage waste.
Barking drum refuse.
Discussion.
3:30 P.M. Report of Committee on Paper Drying
S. B. Jones.
Results of tests.
Discussion.
7:30 P.M. Hotel Astor Annual Dinner.
Ladies will attend.
Judge C. F. Moore, Toastmaster.
Speakers: Dr. Otis W. Caldwell, Director of the Lincoln School "Education for Modern Life".
H. S. Person, President Taylor Society, "Opportunities and Responsibilities of Technical Men."
L. W. Wallace, Exec. Secy. Federated American Engineering Socities. "Elimination of Waste in Industry."
Entertainment features in charge of F. T. E. Sisson.

Wednesday, April 11, 1923

Sectional Meetings

9:30-11:00 A.M. Room 107. Coated and Processed Papers, Edwin Sutermeister, Chairman.
"Coloring Matters for Coated Paper," by Norman Clark.
"Raw Stock or Paper for Coating," by Norman Clark.
"Manufacture of Lake Colors," by H. H. Holden.
"Drying and Conditioning of Coated and other Processed Papers," by J. O. Ross.
Discussion.
9:30-11:00 A.M. Myrtle Room. Mechanical Pulp, W. A. Munro, Chairman.
"A Study of Burrs", by E. R. Low and I. H. Copeland.
"The use of White Water," by W. E. Brawn.
"Grinders," a symposium.
Discussion.
9:30-11:00 A.M. Room 109. Soda and Sulphate.
G. K. Spence, Chairman.
Papers and Discussion.
11:30 A.M. Room 107. Heat, Light and Power. H. S. Taylor, Chairman.
"Heat Transference in the Ventilation of Machine Rooms," by J. O. Ross.
Discussion.
11:00 A.M. Myrtle Room. Sulphite. R. A. Hayward, Chairman.
"Use of Steam Flowmeters," by W. H. Kraske.
"A Study of Papermaking Materials," by A. B. Green.
"Bleaching at High Densities," by R. A. Hayward.
11:00 A.M. Room 109. Cellulose. W. E. B. Baker, Chairman.
"Chemistry of the Sulphite Process", by R. N. Miller and W. H. Swanson.
"Factors of Bleachability."
Discussion.

Wednesday, April 11, 1923

2:00 P.M. Myrtle Room. General Business Session.
Election of Officers.
Resolutions.
Address by Henry P. Carruth.
"Method of Establishing Wage Rates".
Papers and discussion.

Thursday, April 12, 1923

Sectional Meetings

9:00-10:30 A.M. Room 107. Standard Methods of Testing Materials. Helen U. Kiely, Chairman.
Proposal of methods.
Discussion.

10:30-12:30 M. Room 107. Paper Testing. F. A. Curtis, Chairman.
"Valley Test vs. Ink Flotation," by J. E. Alexander and M. L. Caust.
Other Papers.
Discussion.

10:30 A.M. American Paper and Pulp Association. General Meeting.

2:30 P.M. Grand Central Palace.
"A Closed System for a Groundwood Mill," by H. J. Reed.
"Lubrication of Pulp and Paper Mills," by A. A. Capelle.
"Frictionless Bearings," by G. H. Spencer.
"Rosin and Rosin Size," by R. G. Best.

The Paper Industries Exposition, April 9-14 will be held at the Grand Central Palace.

STRIKING STATIONERY BY TORONTO CONCERN

The big development in the papeterie trade and the marked advance in designs of boxes, in the way of utility following their use for stationery purposes, is well illustrated at the annual display of holiday stationery in the warerooms of Messrs. Warwick & Rutter, manufacturing stationers, King Street west, Toronto, which is now in progress. For instance one very artistic design of papeterie has a padded top which can be used as a pin cushion either before or after the box has been emptied of its beautiful writing paper and envelopes. In the dressing, or covering of the boxes, a wide range of artistically designed paper and textiles has been used and on some of the lines it is difficult to tell where paper has been used and where textile, so realistic is the imitation. For instance in the French Batic line of coverings the paper is almost indistinguishable from a rich silky fabric. Other lines are covered with fabrics such as cretonne in various colorings and designs which present a very striking effect. The French Batic boxes are filled with high grade linen kid finish papers, round and square edge cards and have desk pads to match. Then there is the French vein paper in rich blue and green and a full line of designs in shadow cloth and cretonnes. Rose Petal in rich rose color as a back ground, with double correspondence cards, gilt edged on four corners, is a new line which is very attractive and also very effective is the Wisteria lines with their classy dressing. In the Krofton kid finish line of boxes there are seventeen different types of packages, while other lines are the Vice Regal containing a crown as crest, and Glenwold Lawn, finished in rich Christmas red dressing and put out in sixteen different types of boxes. A new type of wing is also shown and promises to be a popular novelty with its imitation Paisley shawl as a covering. All told there are no less than 250 styles and types of papeteries represented in the display which has been created by General Manager Woods, who is also the designer of many of the lines. The firm's travellers will shortly start out with samples of the lines for the next Christmas trade.

BROMPTON WORKING AT CAPACITY

Routine business only was transacted at the annual meeting of the Brompton Pulp and Paper Company, Limited, held March 15. Share-holders had the pleasure of meeting under the chairmanship of President F. N. McCrea, who has been seriously ill. The tone of the meeting was distinctly optimistic regarding the outlook for the company.

Mr. McCrea reported the company's plants to be operating at full capacity, with production at new high levels, and with the output now being around 380 tons of finished products daily. He stated that good news as to the progress of the company might be expected this year. The company, he said, expected to realize a substantial amount from the sale of the hardwood on their limits, on which at present no permanent value is placed on the books.

The annual financial report was approved and the retiring directors were re-elected.

MR. R. A. McINNIS,

Manager of the Abitibi Power & Paper Co. Mill, whose return to Iroquois Falls, after an absence of three months in search of health, was celebrated by a public banquet last week.

INDIAN CHIEF VISITS IROQUOIS FALLS FIRST TIME IN 15 YEARS

An Indian chief visited Iroquois Falls this month for the first time in fifteen years—Michel Banatos, Chief of the Ojibway tribe, who lives at Low Bush. He, Mrs. Banatos and Mrs. McDougall came to Iroquois Falls to have a look through the mill. Michel's tribe used to have headquarters in the Ghost River District and each year went north to James Bay. Their route was through the Abitibi Lakes, Low Bush River, and into the Abitibi about New Post and thence down to the Bay.

Naturally Michel finds a big difference between the virgin forest of fifteen years ago and a beautiful town like Iroquois Falls with a mill turning out 500 tons of paper a day. When he was told that six hundred cords of wood a day were used in the mill, he threw up his hands in amazement.

When they came out of the mill Michel made the remark that he thought he could get lost in the mill easier than he could in the bush.—Broke Hustler.

Any one thing in the creation is sufficient to demonstrate a Providence to an humble and grateful mind. —Epictetus.

BULLETIN ON SWEDISH SITUATION

The Canadian Pulp and Paper Association has ssued a bulletin on the subject of the Swedish lockout. The steps in the present situation are summarised as follows: The existing wage agreement expired on December 31st, 1922.

The mill-owners wanted to enforce a new wage scale involving a reduction of about 11 per cent; the workers demanded increases of 15 to 30 per cent;

First strike on January 3rd., affecting 600 workers in chemical pulp mills;

On January 17th, thirty mills were involved in strike;

Arbitrators award refused by the men on January 27th;

Lockout declared effective January 29th.

The lockout affected 17,000 pulp mill workers of whom some 13,000 were already on strike. The lockout applies to all mills belonging to the Pulp Makers' Association which comprises about 90 per cent of the total capacity; the few mills not in the Association are of little significance.

There are many points of difference between the employers and the workmen besides the wage question. The underlying cause of the dispute appears to be the efforts of the labour unions to force the mills to adopt a collective wage and labour agreement for the whole country, involving fixed demands not only in regard to wages but conditions of employment, etc. The combining of the troubles at the pulp mills, with disputes at the saw-mills and the demand of the men in the woods, has caused the dispute to become very complicated and not easy of settlement. It seems questionable, therefore, whether any settlement can be reached quickly unless a great deal of consideration has been given to the terms in the time that has intervened since the lockout was declared.

Effect On Production

We can get a fair idea of the effect in the production of Swedish pulp by taking the official "Board of Trade" figures for 1922. These figures give the production in 1922 as under:

	Tons	Monthly Average
Sulphite Bleached. . . .	82,630	6,886
Sulphite Unbleached . .x	738,340	61,528
Sulphate	267,000	22,250
Ground Wood (for sale)	142,142	11,845

Up to date we may reckon that the mills have been idle for two months. Using the above average this would give us a loss in production of

Bleached	13,772	tons
Unbleached	123,056	"
Sulphate . .	44,500	"
Ground Wood.	23,690	"
	205,018	"

Sweden's Exports in 1922

The complete figures for Swedish exports in 1922 are not yet published but for the first eleven months they were

	Exports Tons	Monthly Average Tons
Bleached	65,594	5,963
Unbleached	573,[illegible]	52,[illegible]
Sulphate.	191,585	17,417
Ground Wood	151,415	13,764

The principal countries of destination were

	Bleached Tons	Unbleached Tons	Sulphate Tons
England	5,521	157,472	15,431
U.S.A.	25,387	108,571	139,298
France. . . .	8,729	69,870	7,574
Norway	1,254	37,234	. . . .

We have no figures on the stocks held in Sweden at the end of 1922, but the combined stocks in Norway and Sweden on January 1st, 1923 were given as, bleached 11,023 tons, unbleached 101,366 tons and sulphate 35,602 tons. The larger part of these stocks was held in Sweden and they amounted to almost exactly 50 per cent. of the stocks held on January 1st, 1923.

At the end of January the Scandinavian Association reported sales of 40,887 tons bleached, 118,616 tons unbleached and 20,936 tons sulphate sold for delivery during the rest of 1923.

Figuring then on the basis of 1922 we have for Sweden

	1922	
Bleached Production.	82,500	tons
Unbleached Production . . .	738,300	"
	820,900	
Decrease in stocks about	120,000	
	940,900	

That is, about 940,000 tons of sulphite was used during 1922, and indications are that England will consume more in 1923 than it did last year. There is also a strong demand in the U. S. A. and various European countries are increasing their consumption of sulphite. Even if the dispute is settled now there is still the loss of production of about 140,000 tons of sulphite and about 45,000 tons of sulphate, while this loss will undoubtedly be increased since the mills cannot start producing fully right away. Then the stocks are about 120,000 tons less than they were twelve months ago, which will further add to the shortage.

The dispute with the men in the woods will also mean a scantier supply of wood for the Fall and Winter of this year.

These factors all tend to indicate a strengthening of the market as soon as open water conditions exist. Buyers in England, France and the U. S. A. had obtained supplies before navigation ceased but these supplies must be getting low at this time and with low stocks in Sweden prices are certain to stiffen considerably.

JAPANESE NEWSPAPER SPENDS 53.10 PER CENT FOR PAPER

An expenditure for paper amounting to six times as much as for the entire editorial staff of a Japanese news-paper, "Hochi Shimbum," is revealed in a recent statistical display by that newspaper in a report to the Department of Commerce by Commercial Attache J. F. Abbott. Figures on expenditures distributed among the various departments of the newspaper show that the cost of paper amounted to 53.10 per cent.

The Sleepless Member

Mother—"Tommy, slip upstairs quietly and see if papa is asleep."

Tommy (returning)—"Yes, mamma; he's all asleep but his nose."

Ramie

The December issue of the "Journal of the Society of Dyers and Colourists Bradford) contains the introductory speech of Mr. William Marshall upon his assumption of the chairmanship of the Manchester section.

To Canadians ramie has been an object of scientific interest. Its possibilities have been noted and forgotten as something of no great practical value. An article from so high a source and showing the extent to which useful development of the fiber has progressed will be of interest here and we quote a large part of it.

The ramie fibre is again exciting considerable interest in many parts of the world, and as dyers will probably in the near future be called upon to handle quantities of it, it will be of interest to the members of this Society to bring to notice some results which I obtained in March 1919 and subsequently.

History

China grass, Ramie, or Rhea belongs to the natural order **Urticaceoe**, and hence is not a grass at all, but a species of nettle somewhat resembling in appearance and habits of growth the common nettle of Europe. It is, however, a stingless or shooting nettle (subdivision **Boehmeria**). There are many varieties of the plant, but only two are of special interest for their fibre-yielding properties, namely—

(1) **Boehmeria nivea** (white-leaved ramie), which was first known to, and has been cultivated from time immemorial by the Chinese under the name of Tchou Ma.

(2) **Boehmeria tenacissima** (green-leaved ramie), known in India as Rhea and in the Malay Islands as Ramie.

The plant is a shrub reaching 4 to 6 feet, and in some cases 8 feet in height. It is very hardy, and of rapid growth, yielding three or four crops a year without replanting. It is easy of cultivation, and practically unlimited quantities can be grown in China, Formosa Japan, India, Malaya, Queensland, Mauritius, Cameroons, West Indies, Brazil, Mexico and the Southern States of America to meet all possible requirements. The plant has also been grown at Kew. Attempts to utilise the ramie fibre in this country date back to the year 1814.

Decortication

After the plants are cut down, the first process is the removal of the outer bark, and the separation of the bast fibres in the form of ribbons, which are then hung up to dry. A small portion at the heart of the plant is waste, as it is pithy and useless. In China the stems as soon as cut down are soaked in water, and the bark is then scraped off on boards by the native women and children with a knife or ring or the fingers, the bast fibres being cleaned and dried in the sun. The product is the China grass of commerce.

Decorticating by hand is a slow and laborious process, but not an expensive one, because labour is cheap in China, which gives us the finest quality. A mechanical method of decorticating would be of immense value, and inventors, stimulated by the offer by the Indian Government in 1869 and 1889 of a prize of £5,000, have devoted a great deal of attention to the subject both in Europe and America. If a machine can be made which will turn out large quantities, and will not damage the strength and other good qualities of the ribbon, the cost will be lessened, and regular supplies ensured. Some of these machines are said to be working satisfactorily in the United States, and owing to these machinery improvements there are signs that ramie will be obtainable in the raw state much cheaper, and may prove of great importance to cotton manufacturers.

Degumming

Most of the impurities are removed in this process, and the resulting product is practically pure cellulose. The degummed fibre has most valuable properties. It ranks first of the vegetable fibres (cotton flax, hemp, jute) in strength and durability. It is also the least affected by moisture and atmospheric conditions. It is exceptionally white in colour, and the fibres are almost equal to silk in fineness. It has a high silky lustre quite equal to linen in daylight. In artificial light it is certainly superior. It is said to be more hygienic than flax, hemp, or cotton, and washes better. On the other hand, flax is more uniform in length of staple, and less variable in the thickness of its individual fibres. Ramie lacks the elasticity of wool and silk and the flexibility of cotton. Yarns made from it have a tendency to be hairy, which diminishes their lustre, and they have not the same smart appearance as when made from flax. This hairiness is due to the fact that the individual fibres lack cohesion, and do not adhere to each other as in the case with other fibres. It will not bend readily at right angles like cotton, and unless it has been carefully treated has a tendency to break. The fibres are frequently very broad, and at these parts are flat and ribbon-like in form, but are never twisted like the cotton fibre.

Spinning

In strength and fineness the fibre equals the best known fibres, but there is the peculiar hairiness in it which, while enabling it to work with wool, renders it difficult to spin alone on account of its stiffness and lack of elasticity interfering with the twist, thus rendering the yarn rough, although the individual filaments have not lost their silky smoothness. These spinning difficulties have, however, been overcome, and various counts of yarn are now being produced in this country.

The chief physical factors of the ramie fibre in comparison with other principal fibres are shown in the following table (this **Journal**, 1892, p. 50.)

	Ramie	Flax	Cotton	Hemp	Silk
Tensile Strength . . .	100	25	12	36	13
Elasticity . .	100	66	100	75	400
Torsion	100	80	400	95	600

Uses

Broadly speaking, the coarser kinds of ramie are made into ropes. The inferior qualities are utilised for the manufacture of string and fishing nets. The best kinds are used for textiles, either alone or mixed with other fibres. Ramie has been suggested and used for dress goods, carpets, curtains, laces, serviettes, tablecloths, hosiery, sail-cloths, fishing nets, paper and surgical dressings. During the last sixty years few practical problems have consumed so much time, energy, and capital as the attempt to bring China grass into use for manufacturing purposes, such as the manufacture of dress goods (instead of mohair) and of silk goods, either alone or from mixed yarns. This was a most unfair test for the new fibre, and resulted, as one might have foreseen, in total failure. In like manner, knowing its properties, it could not be expected to replace flax, although it has been stated that it is admirably suited for dress goods, table linens, and, in fact, wherever linen is used. The Chinese often wear clothes made from this grass cloth for twenty and more years; they have them dyed several times, and then consider them as new clothes. The resistance to the influence of the weather of the Chinese ships' sails made from grass cloth is well known, and the cloth is sometimes used in this country for making sails for racing yachts.

Ramie material cannot be expected to take the place of ordinary cotton goods on account of its price, but for specialities and novelties there may be many openings where its valuable properties can be utilised. A good illustration of this is found in the manufacture of incandescent mantles, which were first made from cotton yarn. Ramie yarn was tried, and produced a more luminous and stronger mantle, and it is now the principal yarn from which mantle fabrics are knitted and woven. Before the war large quantities were imported from Germany, the British makers only being able to produce a small percentage of the mantle manufacturers' demands; but the deficiency has now been made good, and British spinning plants, which have rendered the country self-supporting in this respect, are also able to meet all other requirements. Mantles made from China grass have a higher and better maintained illuminating power, and are more capable of withstanding shock.

Relative Tensile Strength of Cotton and Ramie Yarn

Average of three tests in each case.	lbs.
20's cotton weft	6.3
20's ramie weft	15.0
16's cotton weft	8.6
16's ramie weft	25.3
1/40 ramie yarn as spun	3.8
1/40 ramie yarn as spun and mercerised	4.3
1/40 ramie yarn as spun and dyed "direct"	3.8
1/40 ramie yarn as spun and mercerised and dyed "direct"	4.3
3/25 ramie yarn as spun and doubled	71.0
3/25 ramie yarn as spun and doubled and mercerised	80.0

GRAND MERE HAS TAKEN UP CURLING THIS WINTER IN EARNEST

Some twenty members of the Grand'Mere Curling Club competed on Saturday March 10th in a medal shot competition for a silver trophy donated by Vivian Burrill Esq. of Three Rivers, Que. The winner was Mr. H. E. Bates with a score of 32 winning by the comfortable margin over the runner up Mr. Henry Simms who scored 26.

NOTABLE SPEAKERS FOR PAPER EXPOSITION

Two notable speakers have been secured for the Printers, Publishers and Advertisers day at the Paper Industries Exposition to be held at the Grand Central Palace the week beginning April 9th. This day has already been announced for Friday of Exposition week, and the speakers who have already accepted invitations to places on the program are Don C. Seitz of the New York World, and Dr. R. E. Rindfusz, secretary of the American Writing Paper Company.

Mr. Seitz will be in a unique position to talk to such a conference, for while he is at the head of the business department of the great New York newspaper, he is also by virtue of his position with the newspaper organization head of the paper mills which the World maintains to provide its supply of newsprint. He will be given liberty to discuss the situation from either side, or both as he wishes, and has been asked to select his own subject. The general intent of the program, however, is to have the meeting a conference between the consumers of paper and the manufacturers, so that the printers, publishers and advertisers may get answers for paper questions which trouble them.

Dr. Rindfusz will speak on "Standardization of Bonds and Ledgers." A task in which his organization has been active for a long period, in cooperation with groups of paper consumers.

One of the many unique exhibits of an educational nature which are under consideration by the Exposition management is a series of reproductions of watermarks, giving not only the early historic types of watermarks, but the later commercial identification of papers by such marks, and down through the present line of art watermarks, such as are used to a large extent in some foreign paper currency. No decision has as yet been reached on this point, but the reproduction of such marks by transparencies is under serious consideration.

With the Exposition still more than a month distant, it is already assured from the nature and variety of exhibits for which contracts have been signed, that the big paper show will show to the paper manufacturer, the consumer and the interested public the intimate relation existing between all phases of the business, through the whole gamut of the machinery, supply and chemical industry, the paper manufacturing industry, with paper in all of its forms, to the conversion into the large number of rapidly developing new uses for this great American product. A visit to the Exposition will give the visitor a realization why the paper and printing industry is sixth in the entire list of American manufactures.

One of the latest exhibits to be secured is one of a big American firm which handles the product of one of the oldest English manufacturers of fine papers. This exhibit will include a display of the wide range of fancy English papers while other exhibitors will have displays of the standard lines of foreign paper products.

The Hotel Men's Association of New York City has notified the Exposition management that it will be wise to ask all interested in the Exposition to make their hotel reservations well in advance of Exposition week.

Institute Items

KINDLEBERGER'S CAREER AN INSPIRATION

Canadians are not likely to agree with Mr. Forbes, the writer of this article, that the K. V. P. mill is the greatest in the world, though, in the editor's opinion, it is unquestionably the finest and greatest of its kind. Mr. Kindleberger not only has an ideal, he lives it.

* * *

Little do we realize the influence our words or deeds may have upon others. This was brought home to me dramatically on visiting Kalamazoo. The leading citizen of that thriving city drove me to a suburb, pointed to a big paper mill, and said, "You were responsible for that mill being built." I was puzzled. He explained: "I decided to build that mill the evening I read the article about John Hays Hammond, the engineer, in your book, 'Men Who Are Making America.'"

The speaker was Jacob Kindleberger, who founded the Kalamazoo Vegetable Parchment Company some ten years ago and who, in this short period has made its products known and in demand both at home and abroad. He is now building what will be the greatest and most scientifically equipped paper mill in the world. It will cost almost $3,000,000. One machine alone will cost $210,000. It will turn out book paper, writing paper, and other high grades at a rate not approached by any machinery now in existence. So superior is the quality of this company's products that most of them are sold up for months ahead.

The life story of Jacob Kindleberger—I noticed that everybody, including his own employees, called him "Jake"——is calculated to inspire every American with faith and courage. He was upon the world to earn his own living when only ten. When fifteen he heard a talk at a Methodist meeting which kindled within him a burning determination to obtain education and make himself useful to the world. At the cost of much effort, sometimes heart-breaking effort, he fitted himself to enter college—this although at fifteen he couldn't write and could scarcely read. Without outside assistance he worked his way through college. To-day he is recognized not merely as perhaps the ablest leader in his industry, but he has contrived to spend a great deal of his time and his money in helping others and in bettering his own city.

All the business organizations in Kalamazoo, led by the Chamber of Commerce, tendered me a notable luncheon, and when in course of my talk I mentioned Mr. Kindleberger's name, every one of the hundreds present broke into such a cheer as few men inspire among their own community. Indeed, the tribute was so touching that an elderly business man came up at the close and said to Mr. Kindleberger, "The way the people here brought down the house when Forbes mentioned your name is the kind of monument I would most like to receive."

I wonder if I dare tell that Kindleberger has all through life followed the now rather neglected rule of giving a tithe of all his income for church work.

Who can say that opportunities galore no longer can be searched out in this amazing land?—(B. C. Forbes in Forbes Magazine).

BIG TIM, OUR SENIOR STUDENT

Everybody in Espanola, and many other places too, knows "Big Tim" Desjardins, the beater engineer, to whom sixty winters have been kind.

Forty four years ago, from the maple shaded Seminaire de Ste. Therèse, sixteen-year-old Timothée went out into the world and, with a few intervals of sawmill work—when it paid better—has been engaged exclusively in the supervision of the festive beater, not even taking occasion to get married, which may have somewhat to do with his three hundred odd pounds, and gaiety.

Forty four years in the beater room—If Tim could stop laughing long enough, his reminiscences would make a good story, but he laughs from the toes up—and around all the while he talks and it effects his enunciation.

Potsdam, Piercefield, Cherry River and Ausable Forks, New York; Austin, Pennsylvania; Norwalk, Connecticut; Kenogami, Quebec and Espanola, Ontario—Roughly that was Tim's iternary up to 1914 and now he seems to have settled down. We met a man of thirty not so long ago, who said that as he was "geting on in years," he could not consider taking such a thing as a course of study in the science and practice of paper manufacture, besides he had been making paper since he was fourteen—chest out, and guessed if a man had "been in the game" sixteen years, you couldn't teach him how to make paper "out of a book." He didn't say what kind of paper he made when he was, say, fourteen and a half. His advice was to take our course to the young fellows. Soon after that we met Big Tim. Sixteen years of infancy and forty-four years of boyhood have brought him to a point of studying his life work and Big Tim is now regularly enrolled as a student in the complete pulp and paper course of the Institute of Industrial and Domestic Arts.

MR. DESJARDINS

COME TO THE SHOW

The management of the Paper Industries Exposition, to be held at Grand Central Palace, New York, April 9-14, invites all students of Pulp and Paper Making to visit the show. This takes place at the same time as the annual meeting of the American Pulp and Paper Association, Technical Association, Woodlands Section, etc. Don't fail to be in New York if you can go.

ILLUSTRATED LECTURE "ELECTRICITY & PAPER MAKING"

Mr. R. H. Rogers of the General Electric Company will give a lecture before the Electric Club of Toronto, at their regular lnucheon, King Edward Hotel, on March 28th., the subject being "Electricity and Paper Making".

Mr. Rogers has been prominently identified with the slides, and will describe in detail the first 100% electric paper mill, which by the way is a Canadian installation.

Mr. Rogers has been prominently identified with the various phases of pulp and paper mill electrification for a number of years, and it is expected that his address will be of considerable interest.

SOME FOREST FIRES OF INCENDIARY ORIGIN

That some of the forest fires which occurred last year and endangered the lives as well as the property of settlers were of incendiary origin, was the statement by Hon. T. D. Pattullo, Minister of Lands, at the meeting of district foresters, held this week at the Parliament Buildings. He asserts that there was evidence to show that some of the fires were actually fanned rather than an attempt being made to subdue them. He declared that in such cases "hanging is too good" for those responsible for such outrages.

Referring to the exceedingly serious fire situation which prevailed last year, the Minister Stated that every precaution is being taken this year to meet any possible outbreak, but he emphasized the fact that after all prevention is better than cure, and that if only the public would fully co-operate with the Department the experience of last year would be avoided.

The meeting of the district foresters dealt with all phases of forest protection as well as other problems which must be met. Papers were read and discussed, among the subjects of chief importance dealt with being:

"Securing Efficiency Through Field Inspection by the District Foresters," by L. R. Andrews, district forester, Vancouver.

"Stumpage Appraised, Gathering the Information and Applying It," by F. D. Mulholland, assistant forester, Vancouver.

"Collecting of Accounts, Methods and Policy of Enforcing It," by P. S. Bonney, district forester, Prince Rupert.

"Practical Results of Investigative Work on Western Yellow Pine," by J. L. Alexander, junior forester, Victoria.

"Organization, Forest Protection Forces, Co-operation of the Public and Control of Honorary Fire Wardens, What Results Are Looked For," by A. E. Parlow, district forester, Vernon.

Control of Fire Fighting Crews, Expenditures, Food Supplies, Handling of Men and Discipline," by Norman Moore, district forester, Cranbrook.

"Success in Policy, Co-operation; How This Work Can Be Extended," by E. B. Prowd, district forester, Kamloops.

"Mechanical Equipment in Fire Fighting, Its Best Use and Possible Extension," by F. A. MacDonald, district forester, Nelson.—Colonist, Victoria, Feb., 24.

1922 VERY NEARLY A RECORD PRODUCTION YEAR IN THE PAPER INDUSTRY

The year 1922 for the paper industry came as near being a record year in production as a somewhat slow market early in the year would permit. At that it almost equaled the previous high record for the industry, that for 1920, when war-period demand swelled consumtion of paper and its products. Essentially, such facts as recovering from a general industrial slump considered, 1922 made a better record than 1920. In 1920 there were 7,334,614 net tons of all kinds of paper produced. In 1920 the output totaled 7,017,800 tons, according to Federal Trade Commission figures.

A noteworthy fact brought out by a study of statistics indicates that roofing felt mills produced more building paper than ever before in their history, even outdistancing 1920. Wrapping paper manufacturers also established a new high point in output last year. Tissue paper mills were another group to put up new high production figures. All other mills came very close to previous record output, so that, to say that the paper industry is back to normal as some factors in the industry would have it, is putting it very conservative indeed. Rather, should it be said that last year established a new peacetime record in the paper industry.

The following is a comparison of the last two years of paper production by months:

Year	Total Production
1922	7,017,800
1921	5,356,317
1920	7,334,614
1919	6,190,361
1918	6,051,523

The next table is a comparison for the past three years of output by grade.

	1922 Tons	1921 Tons	1920 Tons
Newsprint	1,447,688	1,226,189	1,511,968
Book	981,919	725,992	1,104,464
Board	2,153,835	1,664,931	2,313,449
Rag paper	212,122	130,863	311,923
Wrapping	836,271	651,605	831,889
Tissue	197,524	148,142	177,447
Hanging	91,894	69,725	113,824
Fine	361,050	242,485	389,322
Roofing Felt	420,119	286,111	366,941
Other Grades	311,433	210,274	313,387

The Northern Foundry & Machine Company Limited, Sault Ste. Marie, Ontario have secured the Canadian Manufacturing & Selling Rights for the Glen Falls Machinery Company, Glen Falls, New York. This line consists of wet Machines, Sulphur Burners, Pulp Thickeners and other accessories for Sulphite and Ground Wood Mills. Mr. C. H. Timms for many years associated with the Dominion Engineering Works Limited of Montreal, will have full charge of the Engineering & Sales Dept. located at the Factory at the Soo. Mr. Timms succeeds Mr. T. M. Jones who has accepted an executive position with the Matthew & Platt Company of Manchester, England and will be returning to the Country early in April.

SULPHUR FROM BLAST-FURNACE SLAG

In a recent article in "Stahl und Eisen," Professor L. H Diehl, Oberhausen, describes and discusses his proces for for the recovery of sulphur from blast furnace slag, reports the *Foundry Trade Journal.* After referring to the importance of sulphur in modern industry, and to the fact that before the war about 1,000,000 tons of pyrites, 250,000 tons of blende and 30,000 tons of sulphur were imported into Germany each year, he states that during the war every effort was made to increase the output of German deposits of pyrites and zinc blende, and efforts were made to obtain sulphur from the large beds of gypsum and anhydrite (natural anhydrous calcium sulphate). Unfortunately, efforts in these directions have not been entirely successful, and there is to-day a scarcity of sulphur in Germany. It was therefore desirable to investigate every available source of sulphur, which led the author to work on blast-furnace slag. Even if its sulphur content is small, the total amount is very large.

The slag production in Germany before the war was about 20,000,000 tons, with sulphur running from 1 to 2.25 per cent. and averaging 1.50 per cent. This represents at least 300,000 tons of sulphur thrown away each year. Because of this large available supply, efforts were made to develop a process for its recovery.

The Diehl process consists in obtaining sulphuric acid by oxidation of the calcium sulphide in blast-furnace slag by air or by sulphates such as gypsum or anhydrite, with the help of air. The chemical reactions are:—The calcium sulphide unites with oxygen and gives lime, which changes to ortho-silicate, and at the same time free sulphur is liberated. With sufficient excess of air, this is burned and, if not, it passes off unburned with the gases.

Because of the low sulphur content of blast-furnace slag, which precludes remelting or subsequent treatment, all the work was done on the molten slag as it came from the furnace by blowing air through it. Preliminary tests carried out with molten slag and oxygen gave a gas containing 23.1 per cent. SO_2 by volume. Further experiments showed that a slot-shaped tuyere gave a richer gas than a round one. Following these tests an apparatus was designed that has been used successfully for several months at Gutehoffmungshutte. When the apparatus is warm and the slag hot and fluid, the pressure is from about 2 to 3 1-2 lbs. per sq. in., but often rises to about 4 1-2 lbs. if the slag is colder, due to the formation of a spongy solid slag above the tuyeres.

At the end of a run of slag, the tapping hole is opened and the slag drained off. The working door is opened next, and the crusts and scales around the tuyeres broken and removed. The slag coating on the apparatus itself is allowed to remain unless it breaks off automatically, as it protects the metal against sudden changes of temperature, and also serves as an insulator for the slag, preventing unnecessary cooling.

The sulphur output is higher as the slag is hotter and higher in sulphur. Acid slags give off sulphur more easily and more thoroughly than do strongly basic slags. However, the latter are usually hotter and higher in sulphur, so that good results are obtained.

The change in appearance of the slags after treatment is interesting. Slags with large amounts of calcium sulphide are milky because of numerous needles of sulphide. Such slags, after treatment, become completely clear and glassy, a proof that the sulphide is decomposed and the lime dissolved in the body of the slag. In some cases, with high-sulphur slags and insufficient air, free sulphur is produced.

If the gases produced in the process are conducted through iron pipes, an incrustation of white salts is produced, consisting almost entirely of potassium bissulphate. The temperature of the gases is about 930 deg. to 950 deg. C., measured away from the range of radiation from the fluid slag.

The gases obtained by the Diehl process contain on the average 6 to 7 per cent. SO_2, small amounts of CO_2 (from 1 to 1.2 per cent.), and about 10 per cent. oxygen, while the rest is nitrogen. There is entire freedom from arsenic chlorine, flourine, carbon monoxide, sulphur and dust or similar impurities, except for small amounts of potassium bisulphate, which can be easily removed. The gas is therefore remarkably suitable for the production of specially pure sulphur products. A very rich gas can be obtained if a sulphate such as calcium sulphate is added to the slag while air is blown in.

NEW BRUNSWICK NEWS

The chief concern of pulp exporters in the maritime provinces at present is for the safety of docks and wharves from which the pulp has been loaded to steamers and sailing vessels for European and American ports. Most of the harbors are blocked with ice, that is in some instances eight feet deep. There is a fear that with the high winds, the ice will carry the wharves and piers into the sea, in fragments. There will be consequently less accommodation for the handling of pulp for export by water. One steamer recently broke through ice that was rather thin at Yarmouth, N.S., and loaded with pulp at a pier. Before the loading was finished, a cold spell caused the ice to thicken, and the wharf rose two feet. The St. George Pulp and Paper Manufacturing Company of St George, N.B., in which company the New York World has the controlling interest, has had considerable difficulty in shipping pulp by water owing to ice in St. George harbor. Owing to the powerful tides and currents from the Reversible Falls, St. John harbor will remain open.

The Bathurst Company Limited, will appeal the decision of the New Brunswick Supreme Court ordering the company to pay $30,000 levy demanded by the Workman's Compensation Board of New Brunswick. The Bathurst Company Limited, has protested against the inefficiency of this board and the exhorbitant levies, but there seems to be little reilef in sight, for the present at least.

Pulp and paper interests of the maritime provinces are complaining of the scarcity of freight cars in that territory. Shipments have been delayed owing to the dearth of rolling stock. During the winter and early spring, pulp shippers have been handicapped on both land and water. And to make matters worse, the deep snow in the woods of the maritime provinces, has militated greatly against a record pulpwood cut. As a fitting climax, storms and lack of freight cars have prevented in getting the pulpwood to the mills as quickly as necessary.

A pulp and paper school and a school of chemistry will be conducted during the coming Summer by the University of Maine, Orono, Me., under the auspices of the chemistry department. Full information may be obtained by writing Dean J. S. Stevens, Director of Summer Sessions, care of the University.

FORESTRY IN CHINA

The district magistrates' report to the Civil Governor and Industrial Commissioner of Chihli showed successful results in the planting of trees in Chihli Province for 1922:

District	Government owned		Private owned	
	Planted	Alive	Planted	Alive
Suning	6,050	5,072	38,640	32,642
Kucheng	2,135	1,897	191,464	178,446
Tsunhwa	20,323	15,209	109,852	91,345
Sinchen			3,165	632
Sincheng	56,848	45,848	40,699	29,550
Wangtu	16,254	11,772	50,997	38,262
Lingshow			77,156	58,231
Tsanhwang	7,742	5,858	258,454	194,199
Jenhsien	1,748	529	26,696	4,844
Kaoiheng	37,455	24,481	75,555	49,318
Kwangping	101	74	28,879	27,631
Chengan		2,690		32,680
Weihsien	3,672	2,236	120,512	108,286
Yihsien	38393	28,562	124,938	103,470
Peihsiang	2,994	2,024	6,234	4,250
Luping	59,418	57,039	62,598	43,990
Chihcheng	55,556	16,907	10,153	3,444
Hwaian	44,400	30,670	2,110	14,706

1923 "ABC" LUMBER DIRECTORY OF BRITISH COLUMBIA

The new edition of this valuable book of reference is recently off the press and exhibits many features which will make the directory and year book even more useful to the trade than its predecessor.

In an industry such as lumbering in this province, the busy man is continually confronted with the need for obtaining information on a thousand and one matters and this book provides a ready reference, giving instant access to accurate and voluminous data in every department of the trade.

The alphabetical list of lumber and shingle mills is replete with information regarding each mill and the list of logging camps contains detailed information as to equipment, output, personnel and so forth. The lumber mills are also arranged geographically, showing the mills in each district, and there is a "Who's Who" Section with a list of over a thousand names of men connected with the industry. The Tariff Section has been brought right up to date, showing the duty on Canadian lumber imported into foreign countries throughout the world. A complete text of the Timber Laws of British Columbia consolidated and brought up to date is included. There is valuable technical and statistical information giving complete information regarding the woods of British Columbia.

Altogether the book is a veritable guide to the lumber industry of British Columbia and is a worthy successor to the four previous editions put out by the Progress Publishing Company, Ltd., of Vancouver.

The Irish Mail

An American visiting Ireland asked a man servant at a tavern, "How many mails do you have here a day?"

The servant replied, "Three: Dinner, breakfast and supper."

WHALEN PULP PLANNING TO GO INTO NEWSPRINT

In their current market letter on the market for unlisted securities, Balfour, White & Co., Ltd., refer to the active and stronger market for Whalen Pulp and Paper securities. In this connection the circular says:—"We understand plans are under consideration by Whalen Pulp for the manufacture of newsprint and the financing of such development is said to be holding up the annual statement of the company for the fiscal year ended February 28, 1921. This statement was expected last November. The directors hope to present the extension and financing plans to shareholders at the same time the report is put before them. The company is doing exceedingly well at the present time, and is finding an excellent market for their products, and operations are on a profitable basis."

The Pulp & Paper Magazine has not yet been able to confirm this report.

The Fire Creek Coal Company, Inc., Whitehall Bldg., New York, has been organized to continue the sales of Jewett Bigelow and Brooks coal, and in addition to act as Distributors for several other large collieries. Jewett, Bigelow and Brooks who previously shipped considerable amounts of coal into Eastern Canada have retired from the selling end of the business and are now only acting as mine operators. Mr. J. B. Sachs, who is well-known to a number of executives in Canadian pulp and paper mills advises us that the Fire Creek Coal Company Inc., of which Mr. Sachs is President, is in a position to handle coal shipments to Canada in the same satisfactory manner as heretofore conducted by Jewett, Bigelow and Brooks. He stresses the point that they are familiar with requirements of Canadian pulp and paper mills, and also of the kind of coal that best meets their purposes.

NATIONAL VULCANIZED FIBRE CO.

Consolidation of the American Vulcanized Fibre Company, the National Fibre and Insulation Company, and the Keystone Fibre Company, has been announced. The merged concern, to be known as the National Vulcanized Fibre Company will be the largest in its field.

J. Warren Marshall, president of the National Fibre and Insulation Company, becomes president of the new company and will have charge of production. Claude W. Sutton, president of the American Vulcanized Fibre Company, is the new vice-president, in charge of selling.

The American Vulcanized Fibre Company was established in 1873 and was the first producer of vulcanized fibre on a commercial scale. The consolidation was brought about by an outright purchase of the assets of this concern by the shareholders of the National Fibre and Insulation Company. The Keystone Fibre Company was a selling agency only.

The merging of the two manufacturing concerns will have the effect of rounding out production, effecting economies in management and bettering service in distribution. Head offices will be located in Wilmington, Del. Factories are located at Wilmington, Yorklyn and Newark, Del.

PULP AND PAPER NEWS

The annual meeting of the Rudd Paper Box Company, Limited, Richmond Street west, Toronto, was held a few days ago when the annual reports presented indicated a successful year's operations. The following officers were elected: President, W. P. Bennett: Vice-President, S. H. Muntz: Treasurer, E. Victor Donaldson: Secretary, D. S. Porter. Mr. Donaldson is a new member of the executive and joins the Rudd forces as sales promotor. He is widely known in the Canadian paper box trade.

Preparations are already under way for the eighth annual meeting of the Canadian Paper Box Manufacturers' Association, Inc. which will be held at Niagara Falls, Ont., on June 25th and 26th. The sessions will be held at the Clifton House and while the program has not yet been arranged the members of the organization have been warned by the secretary to bear the dates for the big gathering in mind. It is expected that a number of prominent paper men from across the line will be present as guests of the Canadian association.

At the annual meeting of the Telfer Paper Box Company, Limited, 14 Duncan Street, Toronto, held recently, Robert Northey was elected President: James A. Northey, Vice-President and General Manager and Robert K. Northey, Secretary-Treasurer. The company report business as fairly good with a bright season's outlook. They have recently added a Knowlton Double Scorer to their equipment.

Good progress is being made with the new paper box factory being constructed at Hamilton and Queen Streets by the Lawrason-Doughty Paper Box Company, who are now operating at Church and Colborne Streets, Toronto. It is expected that the building will be completed and the machinery installed by June 1st.

At the regular meeting and luncheon of the Commercial Stationers' Association at the King Edward Hotel, Toronto, a few days ago, Mr. Ratcliffe Past President of the Canadian Credit Men's Association, gave a talk on credits, which was listened to with profit by a large attendance of members.

The Porcupine Pulp and Lumber Company, whose plant is located at Hoyle, Ont., is taking out large quantities of pulpwood and rossing it. This is shipped to the paper mill of the company at Niagara Falls, N. Y., the Cliff Paper Company. There is a great deal of pulpwood being taken out in Northern Ontario this season and the past winter has been favorable for operations. Men have been plentiful of late months at most camps and good progress has been made with the work. It is expected if the paper business continues active there will be a raise in the price of wood in the not distant future.

F. M. Schanders, Commissioner of the Border Cities Chamber of Commerce, Windsor, has invited some members of the executive committee of the Canadian Paper Box Manufacturers' Association to visit that city and hold a meeting to enquire into the reason why so many Windsor concerns are purchasing their containers in Detroit. The consumers maintain that they can secure cartons across the river cheaper than they can obtain them from Windsor manufacturers although the latter are protected by a thirty-five per cent. duty. The whole situation is being enquired into.

With power to engaged in business as paper makers, stationers, printers and publishers, Graphic Arts Press, Limited, has been granted an Ontario charter with headquarters in Toronto and an authorized capital of $40,000. Among the incorporators are F. G. Gardiner, H. S. Parkinson and Arthur Barr, all of Toronto.

Fred L. Ratcliff, of the Ratcliff Paper Company, Toronto, and President of the Toronto Rotary Club, was host to several thousand Rotarions at a district meeting in the Ontario capital last week.

It is stated in Toronto that the Ontario Government is considering granting to the Fort William Paper Company, Limited, huge timber limits in the Gull Lake area, west of Lake Nipigon, without calling for tenders, on the ground that companies already established deserve consideration, and that new customers are needed for the hydro-electric development at Cameron Falls. The limits are approximately 3,500 square miles in extent. In return for the grants the company contracts to employ at least 1,000 men for a minimum of ten months in the year in its plant in Fort William and to use not less than 7,500 horse power. In this connection it is interesting to note that little has been heard of late of a similar application presented over a year ago by the Thunder Bay Paper Company of Port Arthur. This company is now a customer of the Hydro and at present has no limits. It is asking for limits in the region east of Lake Nipigon and agrees to build a large addition to its plant. A third company, the Nipigon Fibre Mills, is also applying for limits in the district and is also prepared to sign an agreement. According to the agreement which the Fort William Paper Company will sign the company contracts to manufacture a quality of paper equivalent to that now used in the publication of school books and to supply its paper in sufficient quantities whenever called upon to do so by the Minister of Education.

The Spruce Falls Company, Limited, are turning out 90 tons daily of unbleached sulphite at their mill in Kapuskasing, Ont., and expect to have their temporary power plant in operation very shortly now. It is expected that 2500 horse power will be available for the company about the middle of April.

A couple of the digestors at the plant of the Mattagami Pulp and Paper Company, Limited, Smooth Rock Falls, Ont., were under repair last week, which necessitated a partial closing down of the plant. Although all the repairs have not been completed, the plant is now running sixty-five per cent of capacity.

Production of the Don Valley Paper Mill in Toronto has been retarded considerably of late owing to the breaking up of ice in the river although fortunately there was no heavy flood and there was little damage to the plant.

The many friends in the Toronto paper trade of H. G. French, of the Allan Paper Company, Simcoe Street Toronto, regretted to learn, last week, that he was confined to his house with la grippe.

W. J. Trimble, the well known pulp and paper mill contractor has returned to Toronto after an extended stay in Cuba.

The fifteen-ton groundwood pulp mill of the Port Arthur Division of the Provincial Paper Mills, Limited, which is equipped with two 3-pocket grinders, will start operations this week and will supply the groundwood necessary for the company's paper output. The company is acquiring 30,000 cords of pulpwood themselves and another 10,000 cords from settlers and contractors. Among the next developments of the Provincial Paper Mills will be the construction of a forty-ton soda pulp plant for the making of high-grade paper,but it is not proposed to proceed with this for some little time, although some of the equipment is already in the company's possession.

At the annual meeting of the Dominion Envelope and Carton Company held a few days ago at the head office on Duchess Street, Toronto, the old officers and directors were re-elected. The volume of the 1922 business was shown to have been about the same as the previous year but it was more satisfactory on the whole and the profits were larger. Business during the first three months of the present year has shown a steady gain with the company, particularly in the carton department where a number of unique specialties are being turned out for a number of the cereal companies. E. Newell, the manager, states that prospects for the coming season, both in the envelope and carton departments, are bright and plans are now being drawn for a new factory, the location of which has not yet been decided upon.

Angus McLean, President of the Canadian Lumber Dealers' Association, and head of the Bathurst Company, Limited, which is erecting a 60-ton newsprint mill at Bathurst and which will be in operation in July next, states that the prospects for the business in the forest products line are particularly bright. He adds that the east has a great deal to contend with owing to lack of freight cars for making shipments and also on account of the high freight rates the railways are charging. He feels that until the full supply of cars are forthcoming and the freight rates are lowered the return to business prosperity will be retarded.

Pulp and paper interests were represented in the delegation of business men from the Province of Quebec which visited Toronto during the week in connection with the "bon entente", arranged by His Hon. W. F. Cockshutt, Lieutenant-Governor of Ontario. The following notified their intention of visiting Toronto: Messrs J. Rolland, Rolland Paper Company, Montreal; Carl Riordon, Riordon Company, Montreal; L. R. Wilson, Abitibi Power & Paper Company, Montreal; Hon. H. Mercier, Minister of Lands & Forests, Quebec; W. Gerard Power, Power Lumber Company, Quebec; Geo. M. Stearns, Lake Megantic Pulp Company.

The coated paper section of the Canadian Pulp & Paper Association held a meeting in Montreal on March 16 to consider a uniform costing system.

Mr. R. S. Kellogg, secretary of the Newsprint Service Bureau, was a visitor to Montreal last week.

The Canadian National Railways have issued a new rate list on lumber and forest products, including pulpwood, from stations on the system of Argolis, Ont., Hearst, Ont., and cost thereof, to and including Quebec, Chicoutimi and St. Felicien, P. Q., to C.N.R. stations south of the St. Lawrence, Diamond Junction, P. Q., and west of; also to stations on the connecting lines specified. The rates are lower than those previously charged.

Mr. A. S. Ginger, of the Howard Smith Paper Mills, Limited, Montreal, has resigned. He will leave Montreal at the end of March for England, where he will take up his permanent residence.

The Canadian Mead-Morrison Company Ltd., Manufacturers of Hoisting and Conveying Machinery and Labour-Saving Plants, whose Head Office is in the Canada Cement Building, Montreal, and whose Works are located at Welland, Ont., have recently announced their appointment as distributors of the Cello Projector, a practical motion picture machine which has been made for some time at their American factories. This machine is specially adaptable for use in scientific demonstrations, accident prevention and health propaganda, lecture rooms, and for use in connection sales campaigns.

The Powell River Pulp & Paper Co. is building a new boiler house. The chimney foundation will be a reinforced concrete pad, 42 feet in diameter.

The contract for the structural steel to be used in the building has been awarded to the Canadian Northwest Steel Company, and that for the building itself to Hodgson, King & Marble, of Vancouver.

Uehling Instruments Company, Paterson, N. J., manufacturers of CO_2 recording instruments, have appointed the Combustion Engineering Corporation, Ltd., with head office in Toronto, and branches in Montreal, Winnipeg and Vancouver, as their Canadian Engineers and Sales Agents.

Colonel Harlow D. Savage, Head of the Pulverized Fuel Department Combustion Engineering Corporation, addresses the Engineering Institute of Canada on March 15th on the subject of pulverized fuel, and its application.

Western Canada has shown great interest in this subject and engineers from all over Manitoba and Saskatchewan will be in attendance at the lecture.

For the past seven or eight years Col. H. D. Savage has been devoting all his time to the development of pulverized fuel. At the present time he is probably the most prominent individual in this particular field of engineering endeavor. He has been speaking on this subject for several years past before many of the important engineering organizatioins in the United States and Canada.

KINDLEBERGER ON PROGRAM

Two more strong names have been added to the program for special days to be part of the week's program for the Paper Industries Exposition to be held at the Grand Central Palace, New York, the week of April 9th.

Alfred B. Hitchins of the Ansco Company, Binghamton, N. Y. will give an address on "Peculiarities of Photographic Papers" on Printers, Publishers and Advertisers Day; J. Kindleberger, president of the Kalamazoo Vegetable Parchment Company, will give a special talk on the use of food preservative papers on Clean Food Day: His talk will particularly discuss the use of vegetable parchment in the handling of fish in the fish markets. S. R. Browder, secretary of the Container Club will discuss "Fibre Shipping Containers" on the same day.

Another film has been added to the list which will be shown throughout the exposition; different films being scheduled for different days, and the film program will soon be sufficiently formulated to announce in detail. The Wall Paper Manufacturers Association film of its "story of wall paper" which portrays close ups in the manufacture of wall paper, and the hanging of wall paper and its uses, will be shown.

UNITED STATES NOTES

The wood pulp production of 472 mills, producing about 72 per cent. of the total output of the United States, increased from 2,062,773 tons in 1921 to 2,437,530 tons in 1922, according to statistics issued last week by the Department of Commerce. It was estimated that the total production last year would be shown to exceed that of the year 1921 by about 17 per cent.

Frederick G. Crane, president of Crane & Co., Inc., manufacturers of Government note paper, and head of the Crane family of Dalton, died suddenly of heart disease at his home in Dalton, Mass., last Thursday. Mr. Crane was 56 years old and he has been at the head of the noted Crane family since the death three years ago of his cousin, Senator Winthrop Murray Crane. Mr. Crane was born in Dalton. He was the son of late James Brewer Crane. He attended Greylock Insitute at South Williamstown and Phillips Andover Academy. He then learned the paper manufacturing business from the bottom. He owned Flintstone Stock Farm of 2,959 acres, the largest and most valuable estate in the Berkshire Hills. He was a director of the Berkshire Life Insurance Co., and the Agricultural National Bank at Pittsfield.

Felix Pageristecher, president of the Bryant Paper Company, has been named for membership on the board of directors of the United States Chamber of Commerce. If the nomination of Mr. Pageristecher is ratified at the Chamber's May meeting in New York, he will be the sole representative of the paper industry on the board.

The mill of the Uncas Paperboard Company, Norwich, Conn., recently purchased and put into operation by J. T. Smith, has let contracts for machinery to double the capacity. The output, according to present plans, is to be increased from 100 to 200 tons a day. One contract was given to the Pusey & Jones Company, Wilmington, Del., covering the installation of 30 new dryers to the No. 1 machine, a second contract was let to the Downington Manufacturing Co., of Downington, Pa. This contract covers 25 extra dryers for the No. 2 machine and also 5 extra vats.

The New York State College of Forestry at Syracuse, N.Y., has just completed publication of a compilation of forester's tables. The compilation is by O. M. Porter, Secretary of the Woodlands Section of the American Paper and Pulp Association and H. C. Delyea of the forest engineering department of the college. Surveyors' tables, scalers, tables and volume tables, sixty-six in all, as well as eleven miscellaneous tables are given in the publication which is issued in convenient pocket size.

Damage estimated at about $20,000 was sustained in a fire which destroyed the wood mill of the Oswegatchie Paper Company at Natural Dam, N.Y., last week. The company purchased the Aldrich Paper Company property last August, and at once started the erecting of a new paper mill. The wood mill was to be used in connection with the new paper mill. It is expected that the new plant will be ready for operation this spring, although the work will be put back somewhat because of the fire. The new structure for the main mill was not damaged by the fire.

As part of the program of the Woodlands Section of the American Paper and Pulp Association on Wednesday, April 11, Ellwood Wilson of the Laurentide Company will deliver and address on the "Use of Aeroplanes in Fire Control and Timber Mapping and Reconnaissance," according to O. M. Porter, Secretary of the Section. For this meeting there have also been planned papers and discussions upon "Pulpwood Decay as Affecting Pulp Producers of the United States," "The Hardwood Problem of Coniferous Pulpwood Stands," "Weighing Wood in the Manufacture of Pulp" and "Fundamental Forestry Education." The Holt Caterpillar Tractor Company will present a motion picture illustrating the use of its tractors in the paper industry.

Thomas O. Ross, president of the United Pulp Producers' Association, who has just returned from an extended trip through Latin-American Countries, will address the Pulp Producers at their luncheon, Tuesday, April 10, giving first-hand observations of his trip and telling of paper and pulp conditions in South America. Pulp producers who are not as yet members of the Association have been extended invitations to attend this luncheon.

The National Paper Box Manufacturers' Association will hold its fifth annual convention together with the annual meeting of its Western Division at Indianapolis on May 9, 10 and 11. In connection with these meetings there is to be a trade exposition of unusual interest. The arrangements have been completed by the committees in charge. Harry B. Mahan, of the H. B. Mahan Company of Indianapolis, is chairman of the convention committee, and James L. Kalleen, of the Paper Package Company of Indianapolis, is chairman of the exposition committee. The trade exposition promises to be a veritable market for the entire industry, with supply and machinery men from every part of the United States displaying their products. The annual meeting of the Box Association Supplies will also be held in conjunction with the Box Manufacturers' meetings and exposition in Indianapolis.

Senators McNary and Harrison of the Senate Committee on Reforestation have drawn up a bill proposing a comprehensive policy for the conservation of the timber and pulp wood supply of the nation. They have announced that they will introduce this measure early in the next session of Congress. This committee, the members of which are Senators McNary, Moses, Conzens, Harrison and Fletcher, will visit the timberlands in all sections of the country between now and the convening of Congress. The investigation of Southern timber resources will begin this week.

President Harding, by proclamation, has designated the week of April 22-28 as "Save the Forests Week." Urging Governors of States to do likewise, the President calls attention to the importance of forest preservation to the industrial and commercial life of the nation and to individual welfare.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, March 20. — The paper trade as far as local business is concerned, is of a fair character. The weak spot continues to be the slackness in the printing industry, otherwise the demand for almost every line is steady.

With regard to general conditions, the returns of imports and exports for February show that both are increasing, but that the former is growing at a greater rate than the exports. That adverse balance would be considerably larger but for the exports of forest products. In February there was a gain of nearly 3½ million dollars under this heading, $16,869,580 in 1923 against $13,406,863 in 1922. Although the great bulk of the gain was in pulp and newsprint, other papers were exported in considerably larger quantities. For the eleven months of the fiscal year forest products exhibit an increase of about 42 million dollars.

In connection with the suggested advance in prices by mills making the finer papers it is pointed out that there is a danger of higher values encouraging the importation of goods from other countries, especially from Great Britain. People will undoubtedly buy in the cheapest market, regardless of the country of origin, and it is claimed that it will be a better policy for the mills to absorb the increased manufacturing costs rather than run the risk of additional competition from outside makers. At the same time Canadian companies cannot be expected to indefinitely absorb those costs for the benefit of the public.

The newsprint mills continue to be very busy. As an example of the activity, the statement of Mr. P. B. Wilson, vice-president of the Spanish River Mills, Limited, may be cited. He said that the mills of his company established a new high production record last week by turning out 702 tons of newsprint in one day. Other concerns are also running up to capacity. It is estimated that the consumption in the U. S. for the first two months of the year was about 10 per cent higher as compared with the corresponding period in 1922.

In most other grades of paper there is a good business passing. The mills as a rule are busy, in fact in two or three instances deliveries are over-due. Tissues are being freely purchased while there is considerable activity in boards. Paper stock is very firm. The mills are taking all offerings of rags, and there is a steady demand for waste paper. The outlook for roofing felts is excellent; two of the mills in the Province of Quebec have been handicapped by shortage of water and have not been able to operate to the full extent.

In the pulp department, there is a continued brisk demand for groundwood, but the price is inclined to decline, $37 being quoted at the mill. American buyers are looking for a further drop when the water conditions improve. Some of the Canadian mills have not been producing a large tonnage, consequent on the lack of water power. Bleached sulphite is very firm at from $90 to $100; orders are coming in at a good rate and the stocks on hand are by no means large. Conditions point to a good market for many months to come. Sulphite is slow, there being no inclination to buy heavily.

Ontario Market News

According to the testimony of pulp and paper mill representatives in Toronto the Ontario jobbing trade is using large quantities of paper and orders are being placed freely for most lines of paper. On the other hand some of the paper merchants report that the slowing down of business which came the latter part of February or early in March has not entirely disappeared, although in some lines it is admitted that there has been a fair measure of recovery. All told the jobbers are doing a fair amount of business, although trade is not as brisk as most paper merchants would like to see. From a manufacturing standpoint, however, business is undoubtedly good in the paper line, if a little backward in regard to pulp. Paper mills report good-sized tonnages disposed of to paper converters; manufacturing stationers for instance, being extremely busy, while blank book manufacturers are sending in fair requisitions.

PULP. — For the most part consuming mills are out of the market for pulp and there is a general tendency to hold back purchases of anything beyond immediate requirements in anticipation of still lower prices. Many of the mills, also, had liberal supplies on hand under storage, but enquiries that are coming in now indicate that these supplies are running low and that the consumer will very shortly be in the market. Groundwood pulp continues to show an easing-off tendency and is quoted at from $40 to $45 at the mill, with some sales being made, it is stated, slightly below these figures. Bleached sulphite, also, is easing off a bit here and is now quoted at from $85.00 to $95.00, with unbleached at from $60.00 to $63.00. Kraft is around $65.00 per ton.

TISSUES AND TOILETS. — There is no diminution in trade in these lines and the manufacturers of light weight papers generally are busy and running at full capacity. Prices remain firm. During the week the jobbing trade in Toronto was called on by a representative of a Holland firm who are reaching out after Canadian business and foreign competition generally in the tissue line is becoming pronounced.

BRISTOLS AND BLANKS. — The feature of the week in the market for blanks was a rise in price of Bristols of from ten to fifteen per cent. This applies to all Bristol lines of the higher grades. The rise follows general increases in these lines in the United States, Canadian jobbers having been paying gradually increasing prices for the American product for some time. Canadian manufacturers say that from the standpoint of increasing costs and the state of the market generally the rise had to come. There is a big demand for all classes of blanks and the mills are running at capacity.

WRAPPING PAPER AND PAPER BAGS. — Some of the mills making wrapping paper have orders on hand for three weeks ahead and trade generally is described as good, although jobbers complain of a slight dullness. Paper bags are in fair demand and in flour sacks there is an unusually good demand with the mills many weeks behind with orders. One mill is reported to be working on orders for flour sacks placed last Fall, while the same mill reports current business in this line as excellent.

BLOTTING PAPER. There is a good demand for this line, particularly from manufacturing stationers. The week saw an increase of ten per cent in the Canadian sheets, following a recent rise in the American product.

NEW YORK MARKETS

New York, March 17 — Special Correspondence —Activity in the paper trade continues on a broad scale broad enough to keep manufacturers and jobbers very busy, to fully maintain prices on the various kinds of paper, and to give the market a livelier tone than has been enjoyed since the never-to-be-forgotten period of brisk business back in 1920. There is no gain saying that the paper mills of he country are operating at a better rate of capacity than in a long time; in fact, most mills are producing at a record rate at present. There is still room for further expansion of output because paper mills in the States have so largely increased their capacity during the past several years that they are equipped to make by far more paper than they ever have produced at any one time in the past.

Statements made in the March bulletin of the Federal Reserve Bank of Philadelphia indicate the busy position of the paper industry. The bulletin says, in part: "The demand for paper is now very good, and prices have increased on all grades during the past month or two. Manufacturers advanced their prices from 8 to 10 per cent on the finer grades and about 5 per cent on the cheaper grades on February 1 on account of the sharp rise in chemical pulps in January. Paper makers report that their orders are considerably in excess of those of a year ago, and manufacturers of wrapping papers, who last month were placing a part of their output in stockrooms, now have sufficient orders to absorb their entire production. Nearly all of the mills in this district are running at capacity or very near it. Producers of magazine and book papers find the demand exceptionally good for this season of the year and are running their plants at about 95 per cent of capacity. Paper board manufacturers have noted a decrease in the call for some grades of board, but are still well supplied with orders and are operating at about 90 per cent. Manufacturers of glazed paper state that the demand is heavy and that plant operations are at capacity. Paper wholesalers found the demand rather dull during the first few days of the month, owing to heavy buying at the close of last month, but since then, business has picked up."

Paper manufacturers who were in New York this week generally reported that mills were running at very close to capacity. Moreover, it was stated that most producers had enough orders on their books to absorb practically all the paper they can produce during the next two to three months. Consumers are showing little hesitancy about anticipating their wants and are making sure to cover their requirements by having orders on file at mills, thus insuring a continuance of brisk business for sometime to come unless unforeseen developments arise which would lead to cancellation of orders.

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WOOD PULP

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Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

Conservative members of the trade look for business to continue brisk for at least another full month. After that they expect demand for most kinds of paper will taper off, as it usually does as the summer draws near. However, a consensus of opinion is that the dull period this year will be short — much shorter than ordinarily, because it is believed consumers will start providing for their fall requirements early and that therefore demand will revive sooner in the summer than is usually the case. Present prospects are that if general business conditions keep on undergoing improvement during the spring and summer months the paper industry is due to experience a real boom next fall. The fall of the year is always a time of big paper consumption, and signs are that some new records of paper production and consumption will be established next fall provided business in various lines continues to expand in like ratio to that of the past few months.

Demand for book paper is one of the brightest spots in the market at the moment. Book paper mills are literally deluged with orders and are running at a rapid pace to comply with the wants of publishers. Contract buyers have placed orders for tremendous amounts of paper, and transient purchasers are almost constantly in the market. Prices of book paper are firm, and another advance appears probable notwithstanding that quotations were raised about a quarter of a cent per pound all along the line less than a month ago. Machine finished book is quoted at around 7 cents per pound f.o.b. New York, and super at around 7.25 cents. Prices of coated book are settling now that the casein shortage has been relieved, and range from about 8.50 cents upward, depending on the quality of the paper.

Newsprint is moving in steady volume and prices are strong. It is nothing unusual for buyers to grant premiums for spot deliveries, as continued cold weather is preventing mills from grinding larger amounts of pulp and consequently from increasing their output of print paper. Wrapping paper is firm and in good demand. Prices incline to harden since kraft pulp is rising in cost. Tissue papers are in active demand and are quotably firm.

There is a consistently good movement of box boards. Room for improvement exists, but all in all consumers are taking board in aggregately large amounts. Quotations have held steady this week at about $70 a ton f.o.b. New York on news board and $65 per ton on plain chip-board.

GROUNDWOOD. — According to reliable reports, ground-wood prices display a stiffening tendency. For a time recently there was a softer tone to quotations, but in the meantime demand is said to have increased and prices have steadied since manufacturers have been, in most cases, unable to increase their output in proportion. Cold weather obtains in most grinding districts. The spring thaw has not come yet, and, judging from the temperatures this week, there is no telling when it will, so that with mill streams frozen grinders are hampered in their operations.

Domestic producers are reported quoting around $44 a ton at grinding mills for freshly ground spruce ground wood for prompt shipment. Some prices a little under this have been mentioned; on the other hand, it is said higher figures have been paid. As far as is known mill stocks are not increasing, instead they seem to be on the decline, and this is one of the bullish factors in the mechanical pulp situation.

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

CHEMICAL PULP. There is a firming tone in chemical wood pulp. The tendency is distinctly upward, and every day that the lockout in Swedish pulp mills continues seems to strengthen the technical position of the market just so much. Importers are bullish in their views, and are frequently marking up quotations. Authoritative reports say that sales of No. 1 foreign unbleached sulphite have been made this week at 3.25 cents ex dock New York, while Scandinavian kraft pulp has sold up to 3.10 cents per pound on the dock. Import concerns having pulp on this side of the Atlantic unsold are said to be no longer exerting efforts to move these stocks but are waiting for buyers to come to them, expecting that higher prices will surely prevail in the near future.

Domestic pulps are moderately active. Consumers in a majority of cases are reported seeking to fill their major requirements with imported pulp, but recent developments have induced some to look more to domestic producers than they were wont to up to a short while ago. Prices are quotably maintained and tend to harden as foreign pulps strengthen in price.

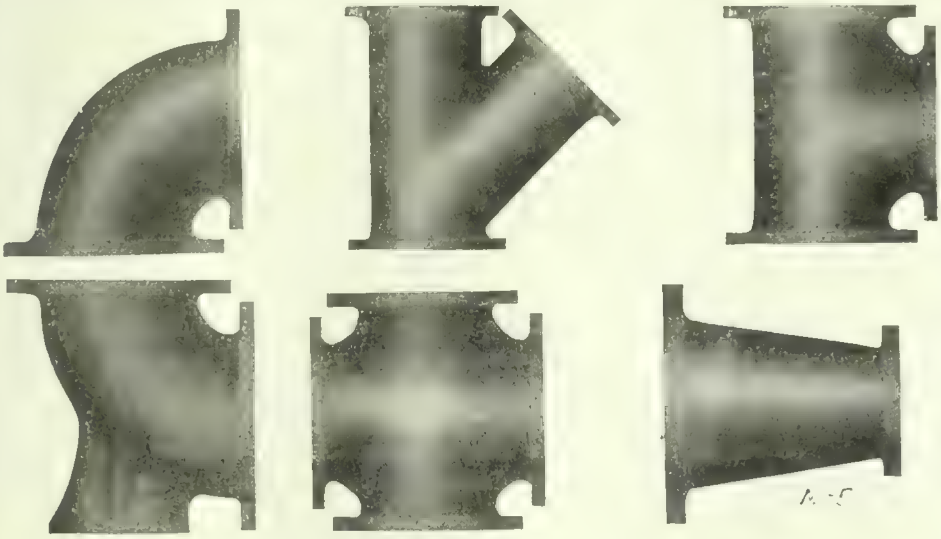
RAGS. — The papermaking rag market is firm. Demand for nearly all grades is good and dealers say they are occasioned no great difficulty in securing the prices asked. This is the time of the year when domestic supplies of rags are at the lowest. It is near the end of the winter when collections are light and just prior to the house cleaning season when available supplies of rags increase at the source. Therefore packers and dealers are quoting stiff prices on the material in stock, and the need of paper manufacturers is urgent enough to oblige them meeting the figures named.

Roofing stock is especially strong in price. New York dealers report sales of No. 1 roofing rags at 1.75 cents a pound f. o. b. this city, and of No. 2 packing at 1.60 cents, and proof is not lacking that it is becoming increasingly difficult for consumers to buy at less than these rates. New cuttings are steadily advancing. Latest quotations range around 14.25 cents a pound f. o. b. New York for No. 1 white shirt cuttings, 5.50 cents for washables, 11.50 cents for unbleached muslins, 8 cents for blue overall cuttings, 10.50 cents for bleached canton flannels, and 8 cents for light silesias. Old whites are moving freely at firm prices, as are thirds and blues and twos and blues.

PAPER STOCK. — Not much change has developed in old paper this week in the New York market. Demand for most grades has been fair and prices have ruled steady to firm, both low and high grades sharing in the business and with no one grade standing out in point of activity. Quatations f. o. b. New York are about as follows: No. 1 hard white shavings, 4.25 cents per pound; No. 1 soft white shavings, 3.60 cents; heavy magazines, 2.40 to 2.50 cents; light book stock, 2.15 cents; ledger stock, 2.75 cents; No. 1 old kraft, 2.25 cents; folded newspapers, 1.32½ cents; No. 1 overissue newspapers, 1.60 cents; No. 1 mixed paper, 1.10 cents. Board mills have bought in good tonnage though mills in the West have operated as purchasers in the eastern market rather conservatively, indicating that they are filling their requirements in their own territory. Packers quote high grades firmly and say they are having a good deal of trouble finding usual supplies.

STANDARD FLANGE FITTINGS

See U. S: 1915 Schedule :: :: :: :: :: *Or Send Sketch*



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PAPER CONVERTERS, too, will be close observers of the various exhibits and take full advantage of the opportunity to check up on their present needs and future requirements.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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:-: EDITORIAL :-:

PAPER WEEK IN NEW YORK

With the exception of the Association for the Advancement of Science, we know of no group of organizations, and without any exception, we know of no group of industrial organizations that so successfully harmonize and join in their annual meeting as the organizations connected with the Pulp and Paper Industry of this continent. Evidence of cordial cooperation and the get-together spirit is shown in the intricate program of meetings in New York for the week of April 9th. No less than a dozen separate organizations, all dealing, however, with the same basic substances and materials, have so arranged their meetings that there is a minimum of conflict and a maximum of opportunity for every person attending the Paper Convention to get the very most out of it. From the woodsman who has to deal with the growing and harvesting of pulp wood and the waste material dealers who gather and distribute rags, waste paper, etc., down through the manufacturers of pulp and paper to the converters of these products into boxes, papeteries and even printed matter, and the technical men who supervise the control of processes throughout these various operations, they all find something of particular interest to them in the program of paper week.

As an additional feature of interest in this event, there is an Exposition of paper and paper products at the Grand Central Palace, which will certainly attract the attention of everyone attending the Convention as well as providing a source of interest and instruction for a large number of the millions in New York. The Exposition will be a combination of educational features with opportunities for buyers and sellers of pulp and paper mill equipment, materials, and supplies to come together.

The appreciation of the industry for the value of this Exposition is shown by the fact that meetings of several organizations are to be held at the Exposition lecture room on Friday of Paper Week. It is interesting to note that one of the subjects for discussion, which is on the program for the meeting of the Society of Chemical Industry, on Friday evening is the Manufacture of Ink and Its Relation to Printing on Various Kinds of Paper. This discussion is particularly interesting in view of the fact that this subject was one of the topics presented at the meeting of the Technical Section in Montreal in January, and one on which there was a very considerable amount of general discussion which shows the wide interest that an audience has in problems relating to the printing industry. This joint consideration of the two principal elements of printing, namely the ink and the paper, should have a very beneficial effect on the quality of work turned out in our print shops.

The Pulp and Paper Magazine has been fortunate in securing booth No. 22, which is at the head of the stairs and just in front of the elevator, and all readers and friends of the Magazine are cordially welcomed to make themselves at home at No. 22.

A FUNDAMENTAL FACTOR IN EXPORTING

One point in the excellent address given by Mr. C. Howard Smith before the Montreal Paper Club, reported in another column, is worth the attention of those manufacturers who are looking for foreign business. This is the absolute necessity of supplying such goods as customers want. Buyers in almost every country have their "fads and fancies", to quote Mr. Howard Smith's phrase, and it seems an elementary business principle to cater to those wants. But experience has proved that dozens of manufacturers, in all lines, overlook this essential in export trade, and try to force on foreign customers articles which are not suitable for the market. Such commodities may be superior to those to which the buyers are accustomed to, but as they do not conform to the customary merchandise they are not acceptable to customers, and opportunities to build up an export trade are lost.

Trade commissioners and consuls have been driving home this point for years, but manufacturers in all parts of the world still try to push unsuitable goods on to foreign buyers; still pack goods without regard to the risks of transportation and to the convenience of the various markets; and still neglect to inform themselves fully of the methods of doing business in the countries for which the goods are intended.

There is a disposition to believe that what is suitable for, say Canada, is suitable for South Africa. It is not so, and those who are anxious to extend their trade abroad must adapt the commodities to meet the prejudices of foreign customers. One factor which helped the success of Germany as an exporter was the willingness of her manufacturers to meet the wishes of buyers — to alter standard articles and even to make goods specially for a given market. In some instances the first orders involved losses but these were borne in the expectation that continued orders would result in profits. This willingness to cater to exact requirements was used as a lever to get an entry into certain departments of export trade.

The grip some U. S. A. firms obtained on South American markets during the war has been lost because of their stubbornness in refusing to comply with the wishes of buyers.

Mr. Howard Smith spoke whereof he knew. His four months' trip to Japan and Australasia opened up sources of information which were only made possible by his visit, and his advice is opportune having regard to the efforts which are being made by the Canadian pulp and paper companies to extend their foreign connections. — F. H. D.

"THE LIVING WAGE"

(From the Journal of Commerce)

In Great Britain just now, a good deal is being said and written anent what is called "the living wage." The big showing made by the Labor party at the last general election is, no doubt, responsible for the prominence that this subject has achieved in that country. For there can be little or no question but that, should the Labor party obtain a Parliamentary majority at any time, strong efforts would be made to establish a "living wage" by means of legislation.

Nor is it only in Great Britain that this question is likely to be prolific of ample discussion in the near future. As part of the announced program of a large section of organized labor and of members of the so-called progressive element in the newly-elected United States Congress, the living wage seems likely to be discussed even more in the future than in the recent past. Indeed, one United States senator, who has enjoyed a reputation for constructive ideas, has announced that he intends to propose a law guaranteeing railroad workers a living wage, although the Transportation Act already contains rules under which it is possible easily to arrive at fair wages for railway employees. A proposal that is arousing so much interest in Great Britain and the United States is likely to be canvassed pretty extensively in this country, too.

In these circumstances, it is advisable to get some idea as to what the expression, a "living wage" means in the mouths of those who use it so glibly. It appears that a living wage from the organized labor standpoint means a purely imaginary amount that scientific budget makers think all workers in a given class of employment should have. In the case of the United States railroad shopmen, their "economists" figured out that a living wage for shopmen ought to be something over $2,000 annually. The United States miners have set similar standards for themselves—perhaps because they employ the same "economists."

In all of Labor's discussion of the living wage, what a given industry can pay is ignored. In other words the issue from Labor's standpoint is not what labor produces but what the workers would like to have in order to maintain a certain scale of living. This phase of the matter is very illuminating as being typical of the temper in which organized Labor, in so many lands, approaches the problem of wages today.

The Court of Appeals of the District of Columbia in handing down a decision declaring the minimum wage law of the district unconstitutional made some observations which constitute a valuable contribution to this whole subject, especially since so-called living wages inevitably become minimum wages. The court says: "A wage based upon competitive ability is just, and leads to frugality and honest industry, and inspires an ambition to attain the highest possible efficiency, while the equal wage paralyzes ambition and promotes prodigality and indolence. It takes away the strongest incentive to human labor, thrift and efficiency and works injustice to employee and employer alike, thus affecting injuriously the whole social and industrial fabric. Experience has demonstrated that a fixed minimum wage means, in the last analysis, a fixed wage; since the employer, being compelled to advance some to a wage higher than their earning capacity, will, to equalize the cost of operation, lower the wage of the more competent to the common basis."

No doubt, those who believe that it is the function of the State to order the lives of all its citizens, from the cradle to the grave, will be little influenced by considerations such as these. But that the arbitrary fixation of wages is not merely undesirable, but impracticable, will be obvious to most people of common-sense who believe that there is still a place for ambition, industry and skill in the industrial world.

COBWEBS

We have just received some interesting samples of high grade kraft wrapping paper produced by the Brompton Pulp & Paper Company. Some rather striking effects are produced by ruling the paper in various tints. The same paper may, of course, be obtained plain, and is provided in a number of different weights.

The paper industry of Canada will sympathize with Mr. I. H. Weldon and Mr. T. A. Weldon, president and vice-president of the Provincial Paper Mills in the death of their father. The character and accomplishment of these sons are a living memorial to his memory.

Pulp and Paper Mill Accessories, Limited, McGill Street, Montreal, has been appointed Canadian Representatives for John M. Watson & Company, Glasgow, Scotland, Packers of rag and paper stock. John M. Watson & Company are one of the oldest firms in this line of business and already are well-known in many Canadian mills.

Mine Timber

By J. A. McMASTER *

The proper utilization of structural wood in the mining industry is an economic necessity. For too long a period, the writer believes, the buying of timber has been accomplished after merely consultation with a handbook showing comparative strengths. This is ideal for steel, but it is to be remembered that the weakness of timber is not generally in its inability to withstand a load but rather to resist decay. Most of the technical writing on timber deals with timber design rather than with the most desirable timber for use underground or for mill construction. This paper deals with the quality of mine timber, with application chiefly to Ontario.

Spruce the Best Mine Timber

The initial stage of a mining property in Ontario sees the local round timber in use. Spruce is generally conceded to be the premier mine timber. Here, spruce is taken to include both the black and white varieties as they are rarely to be had separately. Both black and white spruce are found in the four eastern provinces growing side by side, similarly to red and white pine. No differences exist in the colour of the woods and, neglecting differences in bark, the chief distinction is that black spruce has a closer texture, indicative of greater strength, and has fewer loose black knots than the white spruce. This comparison is of interest as Nova Scotian coal companies used to require that 9 ft. props be of black spruce (and six inches in diameter at end.)

Fir Principally Used

The answer to, ''What timber shall we use?'' would be more easily answered if Ontario's supply of spruce was as endless as fir is in British Columbia. The eastern supply of spruce together with all large timbers is very limited and the large sizes needed for mining supports are not available. Twelve-inch or larger round spruce is not procurable in quantity, hence the supplanting to-day of the round timber by squared manufactured stock from British Columbia.

According to Storms in ''Mine Timbering,'' spruce is the choice of mine timber. Second place he gives to Oregon pine. Oregon pine and Douglas fir are synonymous terms. Douglas fir is available to order in practically any size and is stocked in sizes up to 24″ x 24″, and even lengths between 30 and 40 feet. Recently the Hollinger Consolidated has replaced spruce stulls by 12″ x 18″ fir sticks. The mines at Sudbury have used fir timbers for some time, Creighton standardizing on 12″ x 12″ with 6″ x 8″ in chutes. This adopting of standard sizes is commendable. The near future will likely see the Kirkland Lake and smaller camps using fir.

Fir timber will likely supply the mining market for the next decade and the vast forest reserves of British Columbia should be able to maintain the enormous demands with but slight advances in cost. Fir laid down in Ontario costs about $50. per thousand feet. It is well to remember that one-half the cost of this product is freight and that this may be minimized by specifying (if your order can thus be placed) well seasoned or bone-dry stock. In the purchase of timbers it is considered good practice by lumber concerns to establish a trade with a tried sawyer for the supply of straight-edged, properly dimensioned timber and to retain this connection. This should apply equally to mines. The vast difference in the product of one mill over another is the reason for advocating this policy. This brings forth the point that the initial cost is not the sound basis of valuating mine timber.

Density the Best Guide

Specifications often call for ''virgin growth'', or second growth timber, yet the terms are without fixed significance, and material cannot be positively identified as belonging to one class or the other. ''Virgin'' or first growth means timber that grew up in a standing forest under conditions of active competition for sunlight and moisture. ''Second growth'' when applied to a forest stand usually means timber whose main growing period occurred under lessened competition after all or a portion of the original stand had been removed by cutting, fire, wind, or other agencies. In general ''second growth'' is associated with the idea of a second crop of timber. Virgin timber is the slow-growing timber while second growth, due to more favorable conditions, is relatively rapid. A faster rate of growth is evidenced by wider annual rings. These indicate stronger and tougher wood in the hardwoods, such as ash, hickory, elm and oak, but weaker and ''brashy'' wood in the conifers. Hence for strength, second growth is sought in hardwoods and virgin growth in the soft woods. As a second growth forest attains maturity, the rate of growth slows up and the annual rings may be no wider than in virgin growth of the same size. On the other hand, when a slow-growing, suppressed forest tree is freed by removing the neighboring trees it may grow rapidly for a long period. Therefore it is possible to have some wood with the characteristics of virgin growth and some with those of second growth in the same tree. Hence, strictly speaking, it would be better to disregard rate of growth and rely upon density as a guide to quality. Density is usually governed by a specification of the number of annual rings to the inch.

Pine Timber

One of the chief reasons why spruce and fir stand out as mine timbers is because the sapwood and heartwood of these trees are about equally durable. This is not the case with the pines, as evidenced in the very sappy short-leaf or loblolly pines. It is worth while to explain here how to detect short-leaf pine from long-leaf pine, when this is possible. The latter is the hardest softwood and makes an ideal mill construction timber, and while not as desirable as spruce or fir for underground use, it may be used. Long-leaf pine will enter more and more into competition with fir in regard to cost, particularly in the smaller sizes. Short-leaf pine should not be used for any construction work without previous preservative treatment; but, strange to say, in squared timber it is not possible to determine visually one from the other. The strength of long-leaf pine depends upon the fact that it is a slow-growing tree compared with sl leaf pine, which sprouts up quickly. Hence long-leaf pine usually has the annual rings close together. In

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* Student in Mining Engineering, University of Toronto. Essay submitted to fulfil requirement of **final year.**

round timber it is possible to detect long-leaf pine [illegible] the diameter of the pith, that is, the core in the centre of the tree. If the pith is less in diameter than 0.1 inch, the material is long-leaf pine. To insure the purchase of long-leaf pine in manufactured timber, deal with a strictly long-leaf mill, such as Long Bell; avoid bargain sales by unknown companies. In small lots a safeguard is to specify the number of lines to the inch. This is generally placed at three to the inch.

Rotting of Timbers

The life of timbers is very much affected by conditions in the mine such as whether it is wet, dry, damp, warm, cold, well ventilated and so on. This can be illustrated from personal observation at the Hollinger. Timber in the shafts and around the underground stations appeared to be in good condition. This location was continually wet, and in such a place fir or spruce will last indefinitely. In the main drifts where a constant supply of cool, fresh air passes constantly the timbers were not affected by dry rot or fungus; but in the crosscuts, particularly in the upper, older section of the mine where fewer raises exist and consequently fresh air is scarce, fungus had attacked the timbers and the further in from the drifts one went the more diseased timber was found. It was noticed that those stulls from which the bark had been peeled either deliberately or during the timbering, were relatively free of fungus. This is because the space between the bark and sapwood is a favorable place for fungus to grow. It is, then, at those sections where there warm, damp, non-circulating air that greatest care in the selection of timber should be taken. It is conceded that uniformity in the system of timbering a mine should be adopted; but it does not follow that one grade should be used throughout. At the points where decay is the more likely, preserved timber or the best stocks available, properly seasoned and peeled, should be used.

Care of Timbers

To season, timbers should be stacked for four summer months. This should give the timber the proper strength and endurance for mine use. Very often wet timber is placed in close piles where the circulation of air is prevented, and as the bark is continually wet we have the most favourable conditions for fungoid growth. With round shoot logs, stulls, or lagging, piles should be built in a crib fashion, using two to three logs as horizontal crosses every other tier. With squared timber, piles should be built on bottoms, the front of which should be slightly higher than the rear. Spaces should be left laterally between the timbers and if the material is not too heavy, cross timbers used. Where possible, cover with 1 inch culls. Such a pile should drain readily and the drying process will be very efficient and rapid. Creighton is one mine where shoot logs have been peeled and seasoned to good effect.

Fungus growth on timber is not in every case made up of fibre-destroying organisms, yet the appearance of fungus is to be regarded as evidence of the first stage of decay, as conditions that promote the growth of molds, blue stain fungus, and other non-injurious molds are usually favorable to the growth of the wood destroyers. Antiseptic treatment against these growths has been tried with fair success. Some of the chemicals used are sodium fluoride, borax, soda and cement, or the commercial product "gunite." The last, which is coming much into favour, is sprayed on with a gun. Antiseptics in many cases are of little use, as decay is going on in places not exposed. Hence, pre-treatment of wood for these places should have been resorted to.

Preservative Treatment

Four wood preservation processes are in use, and their respective adoption is based entirely on the increase of life of timber that is required, this increase being proportional to the degree of penetration of the preservative. These methods are:

(1) By spraying
(2) By painting
(3) By open tank treatment.
(4) By pressure treatment.

As a working basis, the life of untreated timber may be taken as 4 years. Methods 1 and 2 are said to give an increase of 2 to 5 years to timber; method 3, an increase of 5 to 10 years and the fourth increases the timber's life indefinitely. The cost of creosoting varies with every case and is dependent on the extent to which the treatment by any method is carried. Creosoting costs are not readily obtainable in Canada. A resumé of statistics in American practise places labour charges at $2 per thousand feet. The labour need not be skilled for this work. In the open tank treatment, which is the more generally practised, the consumption of creosote is about 0.5 lb. per cubic foot. Creosote at 16c a lb. brings this to $6.00 per thousand feet, or a total of approximately $8.00, varying with conditions.

The practise of the Philadelphia and Reading Coal and Iron Co. is notable. Creosoting was first used by this Company in 1907 at Silver Creek mine using the open tank method and crude zinc chloride as the adsorbent. In 1909 they discarded this method for the more thorough treatment by pressure, and a plant was built for this purpose. More recent development at this property saw the replacement of zinc chloride by silicon fluoride which is slightly less costly and for treatment with which but 0.3 lb. of preservative is used per cubic foot. It is claimed to have a greater toxic effect than creosote. A preservative should be fire-resistant. Creosote may be so, but it brings in the alternative evil of fumes in case of fire. The coal industry has in general applied preservative treatment more than the metal mines and the above illustration is significant in that is shows how the use of pre-treatment has grown as it proved economical in that industry.

Sapwood will absorb preservative to a greater depth by dipping than will heartwood, and for this reason round timbers are preferable for creosoting to squared. Jack, loblolly or short-leaf pine, relatively cheap varieties of timber, lend themselves to preservative treatment as well, if not better than, fir or spruce. Costs of preserving dry timbers are much less than with green stock as it takes less time and it is easier to replace air in the outer cells than moisture. To pre-treat green timbers, slow pressure treatment has of necessity to be resorted to for good results. Many mines have begun actively the "drawing" of mine timbers from worked-out sections of the mine. After seeing some of these salvaged timbers and comparing them with creosoted piles resurrected near Niagara Falls, the obvious conclusion was that for this to be an economic policy, pre-treatment in the first place is necessary.

So far these remarks have applied more to timber than to planking. The use of 2 or 3 inch plank wider than 10″ or 12″ practically means the use of western fir. It might be well to state why such plank from the west on delivery is less in thickness than the even inch called for. A rough joist 2 inches thick from the east will stand up to 2 inches by the Ontario standard. The Western standard is 1¾″ and they base their sales on this. Plank from the west are shipped sized or planed to this even thickness. Plans should conform to this to avoid extra cost. For planking of smallar sizes, local spruce, various pines and a limited supply of tamarack is available. A good lumberman's rule or axiom regarding grade of plank is, "When in doubt use good white pine." Creighton mine in 1920 was using a considerable amount of 2″ x 10″ white pine, No. 1 box or common, to a dressing grade. Lately the market has seen an influx of jackpine and spruce, mixed, from the far north and east. Most of this jackpine is saturated with "red horse" streak, which on drying turns to dry rot. This can be bought cheaper than hemlock in sizes 2″ x 4″ and 2″ x 6″ and may find a limited use in wet places or by virtue of pre-treatment, in mills, or underground as plank between rails, etc.

Tips for Buyers and Users

Selling experience in lumber permits me to say that money often could be saved a buyer if he were made conversant with the available stocks as they are to-day, rather than as they were where he last made inquiry. Such neglect on the part of buyers may cost money, as it is not always the aim of a salesman merely to unload stock. With this point in mind I may say that the overhead cost of handling plank could well be reduced by the use of planing-mill machined lumber. The cost is not large, not more than $2 per thousand feet. The reduction in freight often would repay this. For instance, a shaft now wet could be made water-tight by the use of shiplap or plank grooved for a hardwood spline. The latter would make a shaft practically proof against leakage while the former is so readily laid that why it has not been universally used, I am at a loss to know. The side exposed most to weathering need not be dressed. This use of shiplap would insure a finished job in shaft timbering that is lacking to-day, at practically no additional cost. In fact, I believe that laying the plank would be so simplified that a net saving would result. Most mines have as an adjunct a small wood and timber shop. The installation of a planing mill and timber machinery is wholly dependent upon the size of the property. As the machines run only now and then, they often do not mean a business return and are merely for handy use. The buying of lumber already manufactured should be more economical.

Specifications for B. C. Mine Timber

The following grading of mine timber is given by the British Columbia Lumber & Shingle Manufacturers, Limited: No. 1 Fir mine timber to be free of serious shakes, splits, or rot. Will allow variations in sawing, sap stain, solid heart, and stain extending over not more than half of piece. Permits large knots and a few well scattered worm holes and wane, 3 inches on one corner or its equivalent on two or more corners. Will admit 15 per cent hemlock.

This specification appears loose and has been, I should say made by lumber men rather than by mining men. One point, the inclusion of solid or box heart, is noteworthy, as this is really desirable for mine timber. The greater part of construction timber is later resawn by planing mills and for this purpose quartered sticks are preferable. But where sticks are used whole, as in mining, the box heart has many good features. Besides its strength, it minimizes the number of timbers having slashes off their edges. The establishment of trade with reliable firm permits them to sort such sticks for mine use, to a specification.

In conclusion, it may appear that I am pushing economy beyond practical limits in the matter of timber; but, the utter lack of a sense of value shown by most mining men when buying lumber prompts me to say that if they will pay more attention to these and kindred details, it will prove of great benefit both in economy and in general mine maintenance.

NOTE: This article is reproduced here, from the "Canadian Mining Journal", because the similarity in some respects between mine timber and pulpwood is sure to bring on a certain amount of competition for supplies. There are also a number of common problems brought out in this paper that suggest a basis for co-operation between the mining and pulp industries.—Ed.

ABITIBI MAKES GOOD SHOWING

Showing considerably greater receipts despite the low prices which prevailed during 1922, and net earnings equivalent to $7.24 per share on common stock, the ninth annual report of Abitibi Power & Paper Company, Ltd., has gone forward to shareholders recently, is in line with what has been generally expected for it about the Street. It tells in an interesting manner the story of the Canadian newsprint industry for the calendar year, 1922, reflecting the great increases in volume of business over that of 1921 in the higher receipts, although the 1922 average price of newsprint was considerably below that of the preceding year. The greater business activity is also shown by the increase in expenses, although is must naturally be assumed that the cost of the wood being worked upon was considerably lower. The "expense" item, however, includes "operating, general and administration expenses," a term which leaves some latitude with regard to what "general" expenses consist of.

Receipts are shown at $9,461,297, as compared with $8,861,810, in 1921, and $10,580,142 in 1920. Expenses were $5,846,462 as compared with $4,183,637 in 1921, and $5,537,009 in 1920. This left a balance of $3,614,837, from which was deducted $929,123, representing bond interest and interest on bank loans; and $803.391 for depreciation as compared with a charge of $989,762 to this account in 1921. The foregoing deductions left a balance of $1,882,323 applicable to dividends, and after deduction of $70.000 for dividends paid on preferred, there remains available for the 250,000 common shares, the sum of $1.812,323. Payment of $500.000 to holders of the common stock during the year left a balance of $1.312.323 from which is deducted the sum of $53,177 for adjustment of Government taxes, leaving a surplus for the year of $1,259.146, as compared with $2.518.666. In this connection, however, it must be remembered that last year the company appropriated the sum of $2.177,144 for depreciation. and $482.000 as payment of Government taxes for 1919 and 1920. These two items were charged to surplus account. Had they been deducted before the application of the previous balance a small deficit for 1921 would have been the result. The balance at credit of profit and loss stands at $4,807,328, as compared with $3,548,092.

British Trade News

(From Our London Correspondent)

London, March 17, 1923.

The British Paper Makers Association annual dinner has been fixed for Friday March 26, and Mr. Stanley Cousins, Mr. George E. Oswick and Mr. A. W. Foster, B. A. (the Secretary to the Association) are busy making arrangements for what is hoped to be a record gathering of pulp and paper men. There is only one adverse element to militate against success and that is the present poor condition of trade. It is not up to the liking of many mill owners outside the newsprint section and the unsettled feeling at home and in Europe is responsible for present difficulties, which are numerous as well as very trying on those who have capital sunk in an industry which is exposed to competition frfom so many quarters. Lord Riddell will be among the speakers. He is a witty after-dinner speaker and a big newsprint consumer.

A Novel Point

I was engaged this week in helping to solve a novel point between the Paper Workers Union of Great Britain and the Master Printers. It will be recalled that the union some months ago had their workers out on strike, but ordered then to return to work while certain points were submitted to an Arbitration Court for a decision. The Master Printers Federation includes the Master Printers Association. The latter body have affiliated to them the Master Bookbinders and the question arose: was an agreement entered into by the Master Printers Association and the Federation with the Paper workers binding? The Master Bookbinders' case was that, although affiliated, there was an arrangement that they should look after (themselves) their branch of their industry and that the affiliation to the Federation and the Association did not bind them in any agreement. The Paper Workers Union contended that affiliation meant that bookbinders must adhere to the decision of the Federation on the Association and that the agreement was binding. The Arbitration Court agreed with the union and contended that the agreement was binding.

This decision, rather an important one for Associations and Unions affiliated to a Federation, shows that one section cannot act legally independent of the main body. Associations will now commence to wonder where, or how, they stand. Apart from the little nasty knock which the workers have given the masters in the case, the decision is a good one. If it had been otherwise the whole fabric of federations and affiliations would have been torn asunder.

I mention this case for Canadians, as one never knows when a similar question may arise in Canada. In England it is an unusual one. It really means that if an Association (or Federation), signs an agreement it binds all the minor bodies (or associations), within that Association to terms expressed in the agreement—although there may be an arrangement between a minor body and the main body (Association or Federation), to act in certain cases on their own initiative. No doubt this will put a good many thinking and may cause some associations to put their "house in order". It was really a clever piece of work for the paper workers to discover this flaw in their Master's affiliation and combination of associations and credit should be given where credit is due.

Wall Paper Improving

Wall Paper Manufacturers, Ltd., presented a very satisfactory report this week and everything points to the foot that business is improving. A dividend of 10 p.c. on the ordinary shares (of which 4 p.c. interim dividend has already been paid), has been recommended and 5 p.c. dividend on the deferred shares. No less then £100,000 has been transferred to the reserve fund and £114,696 is carried forward

The Pulp Situation

Sellers of chemical pulps report that the market in the United Kingdom is firm and buyers are beginning to consider their position in relation to prices. Groundwood supplies are none too plentiful and quotations for prospective buyers are showing enhanced prices.

The lock-out in Sweden and the weather conditions in Norway are affecting the British market in regard to supplies and prices. There is a feeling that prices for the next six or eight months will be hardened considerably and consumers are not pleased with the outlook.

At present quotations in London are in or about as follows:—

Bleached sulphite, (No. 1) £23¾; Easy bleaching, £16; Sulphite newsprint (strong), £14¼; unbleached soda (No 1), £15; Soda Kraft, £14; groundwood (promp delivery) £5¾ and for forward delivery £5½; groundwood (dry) £10½ for prompt only.

Of course, the lock-out in Sweden is not settled yet. Advantage is taken of it to push prices up as much as possible on the part of Scandinavians and to read some reports one would be inclined to believe that Norway and Sweden were the only two countries engaged in the manufacture of pulp and paper. Meantime, the British mills have fair supplies to go on with, thanks to Canada, Finland, Germany, and the supplies trickling in from Scandinavian sources. Sweden is suffering considerably from the strike, but that is their own concern. They want a little more edification in the policy of the round table conference, which is a great thing and a great elixir to alleviate grievances. To be candid, only those who hold contracts for pulp in Sweden are interested in the progress of the strike.

Considering that the strike was in progress during February it is interesting to note that the falling-off in pulp supplies—it was a short month of working days—was not so great when compared with January supplies. The figures for tonnages from all sources are.

	Jany.	Feby.
Pulp—All Kinds	79,862	51,391

This makes a difference of 28,471 tons. The supplies from Sweden in January were at the lowest 39,000 tons. But the 51,391 tons received from all countries compares favourably with 20,167 tons received in Feby. 1922 and 32,609 tons in Feby. 1921.

The Paper Industry

The recent impetus the paper industry received has enabled settlers to stabilise prices somewhat. There is, however, an enormous amount of "collar work" to be done to push up the export figures and develop a home demand. Recent disputes in the mills are now ended happily for all.

The export figures for February are as follows compared with January.

	January	February
Paper and Boards (cwts)	335,271	385,978

Proceedings of the Technical Section

REPORT OF THE COMMITTEE ON CHEMICAL AND PHYSICAL STANDARDS

MR. BRYANT: I will call upon Mr. Cameron to present the report of the Committee on Chemical and Physical Standards.

MR. E. P. CAMERON: A literature study was undertaken by your Committee to obtain a compilation on the work previously done on the Strength Testing of Pulp. This study has opened out a long list of points to be investigated and it was the decision of your Committee to work from there to the end before tackling preliminary disintegration, beating, etc. To this end the work carried out during the year has been devoted to a study of the variables affecting the strength of the test sheet from the time it is formed until the test is completed.

MR. BRYANT: Mr. Cameron has done an enormous amount of work as Chairman of this Committee and he has tried to get some of his members to do little of the work, too. In this he has not succeeded. I know it because I am one of his members. But in spite of that fact the Committee is going ahead, or, at least, Mr. Cameron is going ahead with the work and he has a very good and a very complete program laid out. He has already accomplished a great deal. Before we do anything else with this report I would like to say that I have a letter here from the Brompton Pulp and Paper Company signed by Mr. R. H. Bryan, their sales manager, which is somewhat in line with the work of this Committee and it might be well for the Committee to take it under advisement. The letter is as follows:

> "East Angus, Que., Dec. 26, 1922.
>
> Mr. Edward Beck, Secretary,
> Canadian Pulp & Paper Association,
> Montreal, Que.
>
> Dear Sir:
>
> In manufacturing Container Board we notice quite a variation in test, whether testing from one side of the Board or the other. We believe there has been some discussion of this matter in the American Technical Association, but no decision has been reached as to which is the correct method.
>
> We wonder if you could not bring it up in the Canadian Technical Section for discussion. You can see if we get an order for 85 Test Board we test it one way and get an average of over 85, while the user tests the Board on the other side and gets on average of under 85, there is a chance for argument.
>
> Thanking you,
> Yours truly,
> Brompton Pulp and Paper Co., Limited,
> R. H. Bryan, Sales Manager."

I think this might have a bearing on the work of the Committee on Chemical and Physical Standards. Has anyone any suggestion to offer to the Brompton Pulp & Paper Company as to which side of the board you should take? If not, we shall leave this to the Committee on Chemical and Physical Standards. What do you wish to do with the report of the Committee?

MR. BEIQUE: I move the adoption of the report.

MR. WARDLE: I will second that motion.

Motion agreed to.

REPORT OF THE COMMITTEE ON ABSTRACTS AND PUBLICATIONS

MR. BRYANT: We will now have the report of the Committee on Abstracts and Publications.

MR. J. N. STEPHENSON: You will find this report on page 27 of the reprint you have in your hands. (The report appeared in the "Pulp and Paper Magazine" on February 1.)

I think this is the first time we have ever had all the papers printed for distribution before the meeting and I want to congratulate those who have prepared the papers upon the help which they have given us in this respect. We appreciate it very much. Next year I hope the papers will come in a little earlier so that they can be mailed to the members before the meeting.

Another point that the Committee wants to bring to your attention is that the last forms of the Year Book for 1922 are now in the press and these will be mailed to the members from the Secretary's office. In regard to the Year Book, if any of you have had advances in your positions, or changed your positions or addresses, or got married, or changed your names or anything of that sort, please send your corrections to the Secretary so that the Year Book for 1923 may be correct and absolutely up to date.

I forgot to make the point in regard to the reprinting of abstracts in the form of the Abstracts Bulletin of the Technical Section. Abstracts have been printed at the rate of about four pages a week during the past year; altogether something like 140 pages of abstracts have been printed, they have been reprinted in bulletin form and the Secretary is distributing them to the members. Some of the members feel that they are not getting the full benefit of the service because the abstracts on beating sulphite pulp and digester linings or whatever you may want, are distributed throughout the year and the suggestion has been sent in to the Committee that instead of reprinting the four pages per week in 16-page form at the end of the month, we hold all the abstracts for six months and then make one large issue so as to have all the abstracts on beating, forestry, paper machine wires, etc., given in groups. I would like to hear any discussion you might have to offer on that point or upon any point you might wish to bring up. We want to give the industry the best possible service and if a bulletin does not answer the needs of the members we want to know it. We had a conversation with Mr. Arthur Baker, Chairman of the British Technical Section, who was here recently, and his idea was that instead of printing all of our abstracts we should simply print the title and the place where the original article appears. Certain members do not approve of that idea; they want the whole of the abstracts reprinted. I would like to know how many members think the Abstracts Bulletin is worth anything at all. If it is unnecessary or of no use, it is a waste of money to go on printing it. But if it is of use, or if we can make it more useful, please let us know how so that we can meet your wishes.

MR. BRYANT: Is there any further discussion? Will some one kindly give Mr. Stephenson the information he desires in regard to the value of the bulletin and state whether he finds it of use in his work or whether we should discontinue it? Will those who are in favor of continuing the bulletin kindly manifest it by raising their hands?

The vote was unanimously in favor of continuing the bulletin.

MR. BRYANT: It seems that we all want it. How many would like it to be changed in the way that Mr. Stephenson suggests; that is by grouping the subects.

The meeting voted unanimously in favor of making the change.

MR. BRYANT: What do you wish to do with the report of the Committee?

DR. BATES: It seems to me that the Committee on Abstracts and Publications have been pretty faithful in their rather tedious work and I believe the Technical Section owe them a debt of gratitude to Mr. Stephenson particularly.

With regard to the abstracts, we receive the current abstracts in the Pulp and Paper Magazine and my opinion is that we might well wait until the end of the year for the collection in permanent form rather than have them issued every six months or at shorter periods. I think that if they could be compiled at the end of the year in a systematic form they would be very useful.

There is one item that has been overlooked. The Chairman has urged that if we have any papers ready during the year we might turn them in to the Chairman of the Committee on Abstracts and Publications for publication in the Pulp and Paper Magazine as publications of the Technical Section. If members would prepare reports of interesting work without waiting for regular meetings, we would all gain by the dissemination of this information.

MR. BRYANT: Dr. Bates is quite right in regard to papers. We receive very few papers from the members of the Section for publication in our official organ, the Pulp and Paper Magazine, and we have not been flooded with papers from members for presentation at our meeting. In fact, for this meeting, there was only one unsolicited paper from a member of the Section and, unless I am very much mistaken, there is only one other paper by a member of the Section; we have to go outside for the rest. Another point is that the executive committee are not getting suggestions from the members of the Section as to how to carry on the work. I rather hesitate to say it but the fact is that the work of the Sections is being carried on by about 20 per cent of its members. I hope that the members will cooperate by offering suggestions to the executive and making contributions in the form of papers to be read at the annual meeting and to be published in the Pulp and Paper Magazine. That is one way in which you can all have a part in the work and add greatly to the usefulness of the Section.

MR. T. J. KEENAN: I have had a good deal to do with abstracts in the past ten or twelve years and I have found for the most part that abstracts as published are not always satisfactory. Let me suggest that you publish the abstracts in the Pulp and Paper Magazine and at the end of the year issue an index of the author's names and titles. You can give the original references and index numbers of the Pulp and Paper Magazine or other journals. Then, anyone wishing to look up the complete article would have the reference in convenient form. That would do away with the expense of publishing a long synopsis of the article.

DR. BATES: I move that the report of the Committee on Abstracts and Publications be adopted.

MR. WARDLE: I second the motion.

Motion agreed to.

Translation of Text Books into French

MR. STEPHENSON: If you are interested in seeing copies of the French arithmetic, first two lessons and also the syllabus in French, I have them here and will be glad to let you see them. I may say that in several of the mills the work has been interrupted, due to the fact that Volumes III, IV and V, are not provided for as to their translation and I am sure that the Technical Section will back up the desire of these mills to be provided with educational facilities by asking that the Institute of Industrial and Domestic Art may be authorized to make arrangements for the translation of the other volumes so that all the men in the industry can be provided with a complete course in French. That is their desire. That point is all the more important at the present time because, as you know, the Province of Quebec has under consideration the establishment of one or more schools in pulp and paper making particularly for the French speaking employees so that they may have every advantage that is accorded to the English speaking employees. They cannot very well teach the subjects without the text books and the only practical solution of the difficulty is to arrange for the translation of the complete work. If such a resolution were adopted it would strengthen the hands of the provincial authorities and of the Institute in helping them to provide the necessary text books.

MR. BRYANT: Do you wish to instruct the organization that is handling this educational work to translate the other volumes into French? Mr. Stephenson, would you like to have an expression of opinion on that matter? Do you require an expression from the Section in order to go ahead?

MR. STEPHENSON: Not necessarily.

MR. COUTURE: There is just one question in regard to the translation of these volumes into French that I desire to bring to the attention of the meeting. If you translate these last three volumes, which are highly technical, into the French language, practically none of the French Canadians in the mills will understand them. I can talk with a certain amount of experience. I keep in touch with all the French journals and I know that when I started reading them I understood only about half of them and it is only by hard work that I was able to understand them at all. I am not putting myself forward as a highly educated person but I am a professional man; and yet when I took up these French journals I was hard put to it to understand a lot of the terms. If you translate these last three books into French it means that you will require to educate the French Canadians in the mills to understand them.

MR. BRYANT: There is no use spending money in translating these books if the men are not going to understand them.

MR. STEPHENSON: We started in to canvas at a certain mill, we had two students enrolled and eighteen good prospects, but when the manager of the mill learned that arrangements had not been made for translation he said, "You will have to stop because these men only know French, they are living in a French town, working for a French company and there is no reason why they should learn English simply to study these three volumes of the text books. If you do not translate them into French these men cannot take the course."

The translator who is doing our work is a man who has had mill experience in a Quebec mill and his idea was that in translating he would use the name of the machine that was used in the mill and put the correct French equivalent, if there is any, in parenthesis, so that a man would get a true impression as to the meaning of the term used. He would know a deckle by the name "deckle" or a lap by the name of "lap", if these are the terms that he is using in his work in the mill.

MR. BEIQUE: In the literature of the industry we have Belgian and French publications and when they refer to a piece of machinery by the French name they give us also the English expression. What is your idea as to the translation of these volumes; do you think that that plan should be followed?

MR. STEPHENSON: My idea is that the English expression should be attached to the translation.

MR. WARDLE: I understand that Mr. Stephenson is simply asking for authorisation; he is not asking the Technical Section to spend any money.

MR. BRYANT: That is all.

MR. WARDLE: I do not think we should object to that.

MR. BRYANT: In the last analysis the Institute is going to pay the bill, but in the meantime Mr. Stephenson is simply asking for our approval. I think it desirable that the Technical Section should give that approval. It is up to the Institute of Industrial and Domestic Arts to find out whether this translation will be of any advantage or not. We will not go any further with that subject just now.

There was no objection to this authorization.

REPORT OF THE COMMITTEE ON TEXT BOOKS

MR. BRYANT: Mr. Carruthers, has the Text Book Committee any report to make?

MR. CARRUTHERS: We tried to save a little time by incorporating our report in the general report of the Education Committee.

MR. BRYANT: We shall now pass on to the report of the Committee on Drying Paper.

REPORT ON DRYING PAPER

MR. WARDLE: The Committee on Drying Paper has only progress to report. We hope to have a very interesting discussion on the paper by Mr. Slater and Mr. Warner tomorrow afternoon and we are then going to present a list of the items of information that it is necessary to get in relation to the dryer section of a paper machine when making a test. The Technical Association of the Pulp and Paper Industry appointed a Committee on paper last fall at Detroit. They are working on the same problems and I would recommend that a permanent standing committee be appointed by the new Chairman to work as closely as it can with the gentlemen on the American Committee and get as much information as possible on this important subject. Everybody is interested in drying. It does not make any difference whether we are making tissue, writting, news or board, we are all interested in drying and that is one of the few points that we can all meet on.

MR. ANDERSON: I beg to move that the report of the Committee on Drying be adopted.

MR. SHIPMAN: I second the motion.

Motion agreed to.

NOMINATING COMMITTEE

MR. BRYANT: I will now appoint the Nominating Committee for the nomination of the Chairman and Council for the coming year, and, if it meets with your approval I will appoint on that Committee Messrs. Anderson, Stephenson and Carruthers. They will report back to the Section.

QUALIFICATIONS FOR MEMBERSHIP

MR. BRYANT: Under the head of "Unfinished Business" we have an amendment to the By-laws that was proposed last year. I will read from the Minutes of the last annual meeting:

> "At the conclusion of this part of the Program Mr. J. N. Stephenson moved to amend paragraphs 3 and 5 of Article 111 of the By-laws relating to the qualifications for membership by deleting the words 'not engaged in selling materials or supplies.' Mr. John S. Bates seconded the motion. Mr. Shipman moved in amendment that the motion lie over until the next meeting. Mr.

Wardle seconded the amendment and the amendment was agreed to."

Now this amendment to paragraphs 3 and 5 of Article 111 of the By-laws comes up. Paragraphs 3 and 5 read as follows:

> "3. A member shall be 28 years of age, or over, and shall have a technical education at least equivalent to a Bachelor of Science degree or Practical Experience that in the opinion of the Council shall entitle him to full membership. He shall have been actively engaged for at least five years and shall have held a responsible position for at least three years: (1) in the manufacture of pulp or paper, or products closely related thereto; (2) in a scientific institution relating to the pulp and paper industry; or (3) as a consulting engineer or chemist, or assistant thereto in the field of pulp and paper, not engaged in selling materials or supplies."
>
> "5. A junior member shall be 21 years of age, or over, and shall have a technical education at least equivalent to a Bachelor of Science degree. He shall be actively engaged: (1) in the manufacture of pulp or paper, or products closely related thereto; or (2) in a scientific institution relating to the pulp and paper industry; or (3) as a consulting engineer or chemist, or assistant thereto in the field of pulp and paper, not engaged in selling materials or supplies."

Is there any discussion on this proposed amendment?

MR. SHIPMAN: This motion, made last year, was postponed as the result of an amendment which I moved at that time and I moved it because, while I instinctively was against the proposal and wished to have some time to think it over, I believed that a great many of the members preferred then not to vote either one way or the other. I do not want to be misunderstood in what I say. I do not think or say anything derogatory to selling organiations or salesmen, but this Section, if we threw the membership open widely, might be changed very materially in its aspect. We are a Technical Section, of the Canadian Pulp and Paper Association. I grant you that a large majority of the salesmen to-day are technical men and could add very materially to the interest and usefulness of our meetings but there is also the liability that there might be certain individuals who would be more interested in selling goods than they would be in promoting the technical aspect of our Section work and of our industry. Therefore I think we would be making a dangerous move and one liable to cause, if not trouble, at least an undesirable change in the trend of the growth of the Technical Section. After thinking this matter over since this motion was made a year ago, I wish to say that I am against the amendment, but I want it to be understood that I am not saying anything derogatory to salesmen in general. But the salesmen have their organization and let us technical men have our organization. These meetings are not held for the purpose of allowing selling organizations to get contact for selling purposes, that is not the purpose. There are places and times for such things but this is not one of them and I am afraid it may tend in that direction if we should change these by-laws as proposed.

MR. CARRUTHERS: I understand that the T. A. P. P. I. have opened their organization to salesmen. We have the T. A. P. P. I. represented here, it would be interesting to have an expression of opinion from some of their members present.

MR. MacNAUGHTON: I rise with a little reluctance because of the nature of the subject that is being discussed, and the way one looks at it has something to do with it because one's opinions are very largely influenced by his point of view. It is true, as Mr. Carruthers has said, that the Technical Association admit as members those who are engaged in selling something as well as those who are engaged in technical work in a paper mill. Nevertheless, when an application comes in the Executive Committee exercises its discretion and scrutinises the individual as well as his technical training and experience and his ability to contribute to the value of the Association. I would say that under a different Executive Committee, and taking a different view as to the character of the membership, the results would materially differ but so far I do not think there has been any difficulty at all from that standpoint. Since I went to New York I have had some criticism — constructive criticism — as to the activity of some of the sales engineers in the Technical Association. Opinions always differ and it is well that they should differ. An Association in which there is no difference of opinion is likely to be a rather cut-and-dried proposition and one which does not amount to much. I believe personnally, and I am supported by a great number of the men in active charge of the Technical Association in that view, that up to the present there has been no detriment to the Association by having men as members who are selling something. The attitude which I, and those who agree with me, take is that the Technical Association is as near as possible an engineering society and that the same ethics should apply. You will notice that in the American Society of Mechanical Engineers, or other similar organizations care has to be exercised and that sometimes the powers of the governing body have to be employed to keep the activities of salesmen in their proper channels. There are men who are so thoroughly trained in salesmanship that if they were in a Methodist prayer meeting and they were called upon to lead in prayer they would say that before they felt that it was proper to address the Almighty they would take a few minutes to say something about the material they were selling. That is the thing that Mr. Shipman and others are exercised about. A man of that character, with the well known ethics of the Engineering Association, would be put in his place and a few examples of men being put in their places would be ample warning to others who might be inclined to follow the same tactics. There are, connected with Technical Associations, men engaged in commercial pursuits whose activities have contributed more to the welfare of the industry on absolutely ethical grounds than the activities of a great many men who are engaged in making paper. If a man who is an engineer selling electrical machinery or ventilating machinery, or special machinery for paper mill work presents a paper or enters into a discussion on purely technical lines and does not advertise his own company or machine that is satisfactory to me and I think it will be satisfactory to most engineering organizations. Why should it not be? Absolutely the only benefit of his getting into the Association is that he is recognized as being an engineer. While I do not desire to influence anybody here, my own opinion is that the fear is rather over-emphasised and that any difficulty that may be anticipated can very well be taken care of by the exercise of a proper discretion on the part of the Committee that has to pass upon the applications.

MR. SHIPMAN: I would just like to say in response to Mr. MacNaughton's remarks that I consider it possible for a salesman to come into our meeting here at our request and give us a talk relative to the particular material which he sells. We had an instance of that one or two years ago in connection with the Harland Drive and we listened to an admirable paper. I do not believe it is necessary to make any such change in the By-laws as is proposed in order to get salesmen to give us such papers.

MR. WARDLE: I seconded Mr. Shipman's amendment last year and he has spoken my mind better than I could do it myself. Apparently our two hearts still beat as one on the subject. However, if the majority vote in favor of the amendment I am not going to get peeved about it. How would it do, in order to get the sense of the entire Section, to submit the question to the membership in a circular letter?

MR. SHIPMAN: The time is getting on so that we have lost a great many of those who were present in the morning. I think that this question is such an important one that we should not act on a majority vote given either for or against with the number of members who are here at the present time. I am thoroughly in favor of having every member of the Section vote on this question and therefore it would have to be done probably by mail.

MR. BRYANT: I think that is a very good suggestion.

MR. J. N. STEPHENSON: Having been the mover of the amendment in the first place, that suggestion appeals to me very much and I think it is the only fair way of dealing with the matter because members who are not here, I am certain, have a right to have their views recorded on a question of this kind. In order that we may have both sides of the question before us I would like to point out that paragraph 4 of Article 111 reads:

> "4. An associate member shall be 28 years of age, or over, and shall have been actively engaged for at least five years, and shall have held a responsible position such as a superintendent of a plant for at least three years in the manufacture of pulp or paper, or products closely related thereto."

Apparently then that clause admits men in allied industries as associate members of the Technical Section. The question has been raised as to whether that privilege should be extended to admit men who are not 28 years of age and those who are 28 years of age to full membership. Perhaps an associate membership is all that is required. Mr. MacNaughton's remarks would seem to indicate that. Is that so? But there is a little difference of opinion between the organization for which he speaks and ours. The T. A. P. P. I. is a more independent organization. They are an independent association; we are not an association, we are a Section or group of the Pulp and Paper Association and we are answerable for our actions to the parent body. We get some support, more or less according to our needs, but our requirements are always met from the Association when we have to ask assistance from it. I simply bring these two points to your attention; they may possibly be incorporated in the presentation of the motion to the members.

MR. BRYANT: Article IV admits persons engaged in the manufacture of products closely related to the manufacture of pulp and paper but it is more or less of a technical provision. It depends on the interpretation of the phrase "products closely related to the manufacture of pulp and paper."

DR. BATES: "Products" means products and not machines. I do not think there is any doubt about that interpretation.

MR. BRYANT: I think that is true. Were the question put up to the Executive Council I do not think it would interpret it in any other way. If there is no further discussion, would you make a motion Mr. Wardle?

MR. WARDLE: I would move that providing it does not conflict with the By-laws, the Secretary be instructed to submit this proposed amendment of Article 111, paragraphs 3 and 5, to the entire membership of the Section by letter ballot.

MR. STEPHENSON: I second the motion.

Motion agreed to.

NEW BUSINESS — STUDENT ESSAYS

MR. BRYANT: We now come to New Business. One thing that should come under this heading is the matter of student essays. As you know, we did not provide for the recognition of essays by the awarding of prizes this year but two very good essays were presented to the Secretary of the Section and they are so good that I feel these students should be encouraged in some way or other. One form of recognition that has been suggested is the publication of these essays under the auspices of the Technical Section, in the Pulp and Paper Magazine. As an additional prize for these essays, it has been suggested that we present these young men with a complete set of the text books. What do you wish to do about this?

MR. CARRUTHERS: The encouragement of these essays is just as important now as it was last year. The presentation of text books would involve less expense, would be of greater advantage to the recipients and would probably be more highly appreciated by them than if the recognition took the form of a money gift. I would favor the idea of presenting these young men with text books and am pleased to move:

> "That the Education Committee of the Technical Section place at the disposal of the Secretary two sets of text books for presentation to the successful essayists in this competition."

MR. STEPHENSON: I beg to second the motion.

Motion agreed to.

(To be continued)

GUGGENHEIMS TO MAKE NEWSPRINT

The Guggenheims are about to enter the newsprint industry, according to a report circulating in New York. Having partly liquidated their interests in the Anaconda Copper Co. and in the American Smelting and Refining Company, the copper magnates plan to devote their capital and energy to the development of a new newsprint manufacturing organization. This new organization is to be based upon the business of a small American newsprint plant already in operation and may, it is reported, later include several Canadian plants. The copper magnates are understood to have already purchased the American plant and to have several possible Canadian purchases in view. Sufficient capital is to be put into the new enterprise to make it one of the leading paper making organizations of the country. The Guggenheims are worth in the vicinity of $500,000,000; obviously they are in a position to make their proposed organization a leader.

Institute Items

HE WANTS TO GET AT

The following is taken from a letter recently received from the General Superintendent of a Canadian mill.

"The first shipment of my work has been received and I am anxious to get to work on it."

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift

A great deal has been said and written about the value of enthusiasm, and, while we must not under estimate its place in our personal lives or in our business activities, it is well to bear in mind the wisdom of Goethe's observation, that "enthusiasm is of the greatest value, when we are not carried away by it."

Even in the matter of saving there is such a thing as being carried away by enthusiasm. The miser is an example of this. In order to save and get ahead steadily it is vital that we always keep our feet on the solid ground of prudence.

To be effective, saving must be continuous. The person who pinches and saves every possible penny for a short time and then gives up and quits, will never reach the goal of independence or success. Therefore, it is well always to have in mind the matter of moderation. Saving a reasonable amount regularly gives ever increasing stabilization and strength.

When we are strong and well we are apt to pay little or no attention to matters of health. Then if we become ill we suddenly become greatly interested in the care of our physical being and we feel that when we recover we will never again allow ourselves to become neglectful.

It is the same way regarding financial matters. In the vigor of youth or in times of great prosperity, we are apt to disregard the value of thrift. We drift along from day to day and year to year without making preparations for the future. Then suddenly some misfortune happens and we find ourselves confronted by the stern realities of financial impairment. Possibly we have lost our position through illness or perhaps the source of our income is unexpectedly wiped out. Then we think of thrift and make up our minds that if we ever become prosperous again we shall not neglect to put aside a portion of our earnings for the future.

Being thrifty does not mean that we must be an extremist in the matter of saving money or in giving up rightful pleasures. Cultivate moderation. Do not save to the point of being a miser, and to the exclusion of the various uplifting elements that should be a part of our lives.

On the other hand we must use moderation in the matter of pleasure and out of our earnings make sure that we are providing for the lean days that are sure to come.

Judging From Ads.

Professor—"Can anyone tell me the secret of Napoleon's success?"

Student—"I suppose he took a correspondence course in something or other."

Howard Smith Addresses Paper Club

In our issue of March 8 we printed an interview with Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, on his trip to the Orient and Australia. Those impressions of Mr. Smith were amplified in an address to the members of the Montreal Paper Club held on March 20 at the Queen's Hotel. In addition to relating his experience, Mr. Smith expressed a most optimistic opinion as to the possibilities of the Canadian paper trade, both as to domestic demand and export business. Mr. Smith is a firm believer in the future of the paper industry, and he gave reasons for the faith that is in him.

Mr. Edward Beck presided, and in introducing Mr. Smith, declared: We all know him. We all esteem him beyond measure. We do not forget the enjoyable outing we had last summer as guests of his company. We are indebted to him, above all else, for his outstanding example as a believer in the paper industry, and as one who is forever devising ways and means for promoting its welfare and advancing its interests.

Particularly is Mr. Smith an inspiration to those who, like most of us here, are concerned in the marketing end of the industry. The paper trade, like others, has its difficult times. I can recall one or two such periods during even the few years that I have been actively associated with it. But I can bear witness that, through good times and bad, our guest is one of those who can always be relied upon to be on the constructive side. While some of us have, in the past, been inclined to give way before temporary handicaps, to see only the dark side of the cloud—to talk only "blue ruin," Mr. Smith, and a few others like him, have refused to be downcast. He and they have looked confidently forward to the upward turn which they knew was bound to come. And, better still, instead of waiting with folded hands, for business to recover, they have put their shoulders to the wheel and have done something to help accelerate the process. Mr. Smith has shown his confidence by going ahead and expanding his plants and getting ready for the active business era that invariably follows in the wake of depression. And it remains to be said that his good judgment has been amply vindicated. Whatever he may have to say to ns today, will, we may be sure, be pitched in an optimistic key.

Mr. Smith, as you are no doubt aware, has recently returned from extensive foreign travels. During his absence, he visited Japan, Australia, New Zealand, China, the Philippines, Hawaii and the Fiji Islands. I am not informed as to whether his original purpose was recreation or business, but I am quite sure that whatever its main object, Mr. Smith would overlook no opportunity of preaching the gospel of Canada and of telling whomsoever he might meet, whether in the Antipodes, or in the Orient, or among the Fiji Islanders, about the merits of Canadian-made paper.

And it might be said, in passing, that Canada needs and the Canadian paper industry needs, all of that kind of missionary effort that can possibly be accorded them. We are far behind some other countries that might be mentioned when it comes to commercial propaganda abroad, as Mr. Smith can probably testify as the result of his own observations. We have got to extend our markets for every kind of commodity we produce, if Canada is to make real national progress. Take our own industry as a case in point. Our production capacity is already over-extended in comparison with the domestic demand and the foreign markets normally available to us. We have increased our output of newsprint 122% since 1915, while the domestic market absorbs less than 12% of the product. The output of pulps of various kinds increased 127% from 1913 to 1920, while Canada with difficulty is able to absorb about 60% of the product. Our present output of book and writing papers is three times greater than it was in 1917, and only a fraction of it, so far, finds a market abroad. The domestic demand is not sufficient to absorb all we are capable of producing. Boards, buildings,wrapping and miscellaneous papers have also increased out of all proportion to domestic requirements. To keep our board machines in constant operation would require foreign markets for from 45 to 50% of the possible output. These are not now available. Consequently, our board machines are under producing. Our exports of book, writing and miscellaneous papers must be increased in the very near future or expansion of the industry will stop.

Mr. C. Howard Smith stated that the Japanese thought a great deal of Canada, mainly on account of the C.P.R. which they believed had done much for their country. He had visited some of the Japanese factories, and found them to be magnificent plants. Japan was going to manufacture good goods—there was to be a change in this direction. The men and women were fine workers, and received a very low wage. The standard of living there was steadily being raised, and this would have an effect on the cost of labour. Japan was desirous of increasing the business with Canada. He was the bearer of an invitation from commercial men for a delegation of Canadian manufacturers and producers to visit Japan this fall, and this would be placed before the Canadian Manufacturers' Association. He was of the opinion that great benefit would result from the acceptance of the invitation. The delegation would be the first of its kind from Canada. He was sure that there were opportunities for the interchange of commodities.

From China and the Philippines, Mr. Smith visited Australia, which he described as a very fine country. He found the people very British in sentiment—but lacking in the Empire spirit. The Australian people were strongly desirous of manufacturing as far as possible the goods they required. The result was that manufacturers were able to secure almost any tariff they wanted. While there was a market in Australia for Canadian goods, it could not be obtained very easily because of tariff conditions. With regard to the paper trade, there were many lines the Australian people would have to get from Canada. The people were trying hard to manufacture paper, but they were handicapped by lack of raw material. He was of the opinion that this would retard the development of the industry.

Mr. Smith found a different feeling in New Zealand —they appeared to understand Canadians. In New Zealand, Canada was treated on the same footing as Great Britain in the matter of tariffs. A considerable trade had been built up between Canada and New Zealand. That country was prosperous and in his opinion was bound to go ahead faster than any other country in the world. There was a strong labour Government, but matters seemed to work out very satisfactorily.

After touching briefly on his stay in the Fiji Islands and the Philippines, Mr. Smith devoted some remarks to the outlook for the Canadian paper trade. Mr. Beck had stated that the speaker was an optimist; he had always been one. Canada was peculiarly well situated for the development of the paper industry. He had studied the different countries of the world from the pulp and paper standpoint, and he believed that Canada had greater advantages than any of them. The consumption of paper was bound to grow; it was being used more extensively than ever before. Our manufacturers of newsprint and other grades where mass production was possible had shown that they could compete successfully with the whole world. In other lines of paper where production was broken up, and where fads and fancies had to be studied, the problem was more difficult. People in other countries had their own ideas of their requirements and these must be catered to—so far as his own company was concerned an effort had been to meet the requirements, with the result that the company had been fairly successful in building up an export trade. He was satisfied that the different lines mentioned by Mr. Beck could find markets in the world and could successfully compete provided that the mills could give what the purchasers wanted.

There were few places outside Canada where pulp could be made. A pulp mill required immense resources of wood, and those resources had been taken up. Alaska had been mentioned, but the supplies were a long way off. The industry had grown to such magnitude that raw material in enormous quantities was essential, together with power and coal. For the last two years the productioin of paper exceeded the demand; but the demand is now coming up and overtaking it. In his opinion the demand for the next two years will outstrip production. They would, he believed, find a stiff demand for paper with a higher cost of manufacturing and consequently higher selling prices. Every mill he knew desired to get prices down in order to increase consumption, but he was satisfied that the cost of manufacturing would increase.

In moving a vote of thanks to Mr. Smith, the Chairman referred to the speaker's remarks on the expansion of the paper industry, and said that some people spoke as if Canada had an inexhaustible supply of raw materials. Our mills were, however, using pulpwood at such a rapid rate, the loss by fire was so serious, and the exports of pulpwood so large that, unless means were taken to replace the raw material, the industry might find itself up against a wall. One could not draw upon a reservoir in this way without coming to the end of the supply. Our growth of wood was not commensurate with the consumption. Mr. Beck also referred to Mr. Smith's remarks upon giving a customer what he required, and declared that this was the only successful method of cultivating an export trade.

The next meeting of the Club will be the annual meeting at which the officers will be elected. Messrs. Dyer, P. Bevens and Home were appointed a committee to receive nominations.

No fountain is so small but that heaven can be mirrored in its bosom; no life too little to reflect the Divine.

SALESMEN TO EAT, TALK AND DANCE

United States Senator Pat Harrison, of Mississippi, probably the leading orator on the democratic side of the Senate, will be the main speaker at the annual banquet of the Salesmen's Association of the Paper Industry, Tuesday evening, April 10. The program for the Salemen's convention in the forenoon will include two speakers on salesmanship, Dr. Warner M. Persons of the Harvard Committee on Economic Research talking on "Recent Developments in the Paper Industry." Prof. Lawrence W. Rogers of New York University, a specialist on salesmanship, will speak on "The Service Factor in Selling."

The Salesmen's Association will hold a forenoon meeting, these and other addresses to be followed by the annual business meeting, and the afternoon will be devoted to a visit to the Paper Industries Exposition. In the evening the speaking program will be followed by the annual dancing party, which places in the hands of the salesmen of the industry the entertainment of the ladies who accompany their husbands to New York during Paper Week.

CHANGES IN DYESTUFF DISTRIBUTION

The Sandoz Chemical Works of Basle, Switzerland, and McArthur Irwin, Limited of Montreal, are announcing that, by mutual consent, the agency which McArthur Irwin, Limited, has held for the sale of Sandoz products, is now terminated.

The Sandoz Chemical Works has opened offices laboratories and ware house at 111 King Street, West, Toronto, Ont., and has already received a consignment of a wide assortment of dyes suitable for Canadian consumption.

The Sandoz Chemical Works, Limited, will employ a suitable corps of technical and commercial men, and stands ready to make prompt deliveries and to render such technical service as Sandoz furnishes all over the world.

McArthur Irwin, Limited, has again become sole importers of the dye stuffs manufactured by Actien-Gesellschaft fur Anilin-Fabrikation, Berlin, which dyes they distributed prior to the War. In addition, the concern also becomes sole distributors of the dye stuffs manufactured by Chemische Fabrik Griesheim-Elektron, Frankfurt a/M., and Chemische Fabriken vorm. Weiler-ter Meer, Uerdingen.

McArthur Irwin, Limited, has received large stocks of all dye stuffs manufactured by the three above firms, and is in a position to serve the trade, as in the past.

QUEBEC-ONTARIO FIRE PATROL

Quebec, March 25.—The number of forest rangers engaged in the work of forest control, with the object of preventing fires in the vicinity of the borders of Ontario and Quebec, will be tripled during the coming season. Mr. G. Piche, chief forester, had a conference with Mr. Zavitz, representing the forest department of Ontario and the executive of the Ottawa Forest Fire Protective Association. The authorities of the State of Maine are to be interviewed also by Mr. Piche, to arrange for cooperation in the forest fire control.

What we gather of earthly goods we leave behind: what we gain in moral and spiritual character we keep forever.

GOOD ADVANCE IN EXPORTS

The report issued by this Canadian Pulp and Paper Association gives details of the exports of pulp and paper for February. The total value of these exports amounted to $9.983.678. This is a slight decline from January, when the value was $10.298.243, but is an appreciable increase over the figure of $8.049.208 for February 1922. February is 10 per cent. shorter than January.

Details for February, 1922 and 1923 are as follows:

Paper:

	1922.	1923.
Newsprint	$5,040.244	$6,360.140
Book Paper	9,850	20,790
Other Paper and Manufactures	551,626	649,207
	$5,601,720	$7,030,137

Pulp:

	1922.	1923.
Sulphate	$ 690,757	$ 618,342
Sulphite, Blchd.	756,457	1,105,616
Sulphite, Unblchd	594,625	696,128
Mechanical	405,649	533,455
	$2,447,488	$2,953,541

These figures show a considerable increase over those for last year in all grades of pulp and paper, except sulphate pulp. Newsprint exports were greater by 13,666 tons, and total pulp exports greater by 6,945 tons.

The distribution of the February exports by countries was as under:—

	Paper	Pulp	Total
U.S.A.	$6.149.242	$2.771.912	$8.921,154
U.K.	229.346	48.240	277,686
Other	651.549	133.389	784,938
	$7.030.137	$2.953.541	$9.983.678

Exports of pulpwood in February were 99.830 cords, valued at $866,128, compared with 133,328 cords, valued at $1,785,886 in January.

The figures for February give us the totals for eleven months of the fiscal year which ends on March 31, 1923. A comparison of these figures with those of the corresponding eleven months ending February 28, will show the effect of the increased demand for pulp and paper products during 1922.

Details are given below:

Eleven months to February 28th—

Paper:

	1922	1923
Newsprint	$57.842.499	$64.058.060
Book Paper	200.650	260.829
Other Paper and Manufactures	4.032.371	5.705.033
	$62.075.520	$70.023.922

Pulp:

	1922	1923
Sulphate	$ 7.004.618	$ 8.267.965
Sulphite, Blchd	7.404.827	11.550.810
Sulphite, Unblchd	8.407.843	9.930.148
Mechanical	9.893.155	8.829.798
	$32.710.443	$38.578.721

Exports of newsprint increased by 231,352 tons, or 35 per cent. and exports of book paper were more than double those for the corresponding period of 1921—22.

Exports of wood pulp show an increase of 211,299 tons, or 37 per cent for the current fiscal year.

Pulpwood exports were also greater than in the previous fiscal year, the total for the current year being 982.969 cords, valued at $9,772,219, compared with 728.969 cords valued at $8.923.167 for the previous year

Exports of newsprint were 1,687.903 cwt., against 1.414.583 cwt. in February, 1922, and total pulp, 1,009.293 cwt., against 870,387 a year ago. For eleven months newsprint totalled 17.861.457 cwt. against 13.234.414 cwt. and all pulp, 15,485.785 cwt. against 11.259.812 cwt. same period a year ago.

CHARLES A WOODCOCK

A host of friends were shocked, last week, to hear that Charles A. Woodcock—"Charlie" to many of them, died in Montreal at the home of his brother-in-law Mr. W. F. Robinson of J. H. A. Acer & Co. He was widely known as a first-class paper maker, an able manager, an inventor of no mean ability, a kindly boss, and a good friend. The story of his brief but useful life is well told in the following editorial in the Glen Falls "Post-Star."

> Overcoming one obstacle after another Charles A. Woodcock, who died yesterday in Montreal, not only attained success in his chosen profession, but so shaped his life that he became one of the community's most honored and valued citizens. Beginning his career on a farm in Argyle as a son of parents in moderate circumstances, he acquired as much education as was possible in the North Argyle district school. Later he came to this city and attended the Glen Falls Academy, but in order to obtain this higher education he found it necessary to work before and after school hours, so as to pay his way.
>
> With his education completed, Charles A. Woodcock did not cease to work. He taught school for a time, but this vocation did not give him the opportunity for applying his energies in such a manner as to permit him to advance. From boyhood he was possessed of a desire to progress. He loved to see results come from his efforts and to grow as he worked.
>
> Believing that the paper industry held opportunities for the future, Mr. Woodcock entered the employ of the International Paper Company. Here he found what he most desired—a place to apply himself to his work, to obtain the best results he could and a place where his work counted. He went about his tasks in such an earnest and thorough manner that he soon attracted attention in the paper industry. Twenty years ago he became associated with the Laurentide Pulp and Paper Company's plant in Canada and there he continued to work and progress. In 1911 Mr. Woodcock returned to Glen Falls to become manager of the paper mill of Finch, Pruyn and Company, Inc., and continued in that capacity until a breakdown from overwork recently compelled him to cease his activities.
>
> Mr. Woodcock was as devoted to his family, his church and his country as he was to his work. He took a keen interest in the affairs of the community. Through his activities in the paper industry, Mr. Woodcock is reputed to have amassed a fortune of nearly half a million dollars. Although money does not represent all that is to be desired in life, in this instance it illustrates that success and wealth are within the grasp of those who are willing to work and possessed of a desire to succeed.
>
> Charles A. Woodcock found happiness in his work. Being happy in his work he likewise found

happiness in his home, in his church and in his duties as a citizen. Regardless of the success he achieved, he never overlooked those of his fellow men, who were destined to remain at the foot of the ladder, and his dealings with the employes under his supervision were always kindly and considerate. Tired in body as he may have been at the end, from his hard work, which no doubt shortened his years, Charles A. Woodcock entered the Great Beyond, knowing full well that he had lived to see the results of his labors, not only in his chosen profession, but in his family and church life and in the performance of his duties as a citizen, held up as an example for rising generations.

In passing to his Maker, Charles A. Woodcock leaves a host of friends and acquaintances who are better for having known him and a community which is proud of having had him as a citizen.

INK MAKERS AND PAPER CHEMISTS TO MEET

Printing inks and their relation to paper will be featured in addresses and discussions at the next monthly meeting of the Society of Chemical Industry at the Chemists' Club, 52 East Forty-first Street, New York, on Friday evening, April 13. The original date of meeting was April 20, but as the Paper Industries Exposition will take place during the week of April 9 to 14, at the Grand Central Palace, with the annual conventions of the national paper trade organizations going on at the same time at the Waldorf-Astoria, it was deemed advisable to hold the S.C.I. meeting a week earlier than usual.

After the reading of papers on the manufacture, composition and uses of printing inks by ink chemists and specialists, the characteristics of printing papers will be described and discussed by representatives of paper manufacturing firms.

The results obtained with different inks on papers of different finishes, coated and uncoated, vary greatly, certain color changes being said to be caused by reactions of the paper with the pigment constituents of the ink. This is the contention of the ink makers, but paper chemists generally deny the existence of any specific reaction of paper to chemicals and treat as a myth the alleged alkaline or acid reactions of paper.

The question of colored inks and the reactions of some colors is an interesting one and it appears to be difficult to get paper manufacturers and ink manufacturers to agree on the nature of some of the changes that take place in the ink after its absorption by paper.

The papers to be presented at the meeting on April 13 include the following:

"The Manufacture and Uses of Printing Inks," by E. H. McLeod, of the Ault & Wiborg Company, New York; "The Fading of Lithographic Inks," by A. C. Chesley, of The American Tobacco Company, Brooklyn; and "Ink and its Relation to Paper and Printing," by Arthur S. Allen, of Philip Ruxton, Inc., New York.

The side of the paper manufacturers will be taken by several paper chemists and engineers, who will elucidate the peculiarities of the various printing papers. Among those who will lead in discussing the qualities of paper are C. Frank Sammet, of Crane & Co., Dalton, Mass.; Wm. G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry, and Fred C. Clark, of the Pejepscot Paper Company, Brunswick, Me.

The Paper Industries Exposition is the first of its kind and will attract a great gathering of papermakers, publishers and printers.

MANITOBA MILL FINALLY UNDER WAY

We are indebted to the Free Press Bulletin, Winnipeg, for the following.

Initial steps of the $4,000,000 project whereby a pulp and paper mill will be erected at Fort Alexander and that point connected with the Canadian National railways line at Grand Beach have been taken. Ties for the 18 miles of railway to connect Fort Alexander with the National railways line have been shipped to the proposed site of the line. All the material for the construction of the mill will be transported by barge from Winnipeg along the Red river to Lake Winnipeg and along the Winnipeg river to the site at Fort Alexander.

Work on the plant will be commenced May 15 and the mill will be ready to start operations March 1, 1924, B. W. Thomson, vice-president of the J. D. McArthur company, announced and said that all necessary arrangements have been completed with eastern Canadian and British capitalists to finance the undertaking.

It is the intention of the company to instal as an initial unit of the plant two paper machines with a total capacity of 120 tons of newsprint a day, which will give employment to between 200 and 300 persons at the mill all the year round, and for 1,500 men in the bush during the winter months. Later it is intended to instal four more machines which will give the plant a capacity of 360 tons of newsprint a day.

The Manitoba Pulp and Paper company, limited, has a Manitoba charter at the present time but arrangements are being made to secure a Dominion charter

TRADE ASSOCIATION MEETS WITH A.P. & P.A.

The National Paper Trade Association has accepted the invitation of the American Paper and Pulp Association to join with the manufacturers in the forenoon session of April 12. This is following out the custom of the last few meetings, both in New York and Chicago, of bringing the paper merchants into the manufacturers' convention, at a time when general subjects of interest to the entire paper industry are being discussed. The National Paper Trade Association will clear up its own program on Monday, Tuesday and Wednesday, and will then join the manufacturers in the entire Thursday program, including the forenoon session at the Waldorf-Astoria and the afternoon visit to the Paper Industries Exposition.

Dr. B. M. Anderson, Jr., economist of the Chase National Bank will open the forenoon program with a general discussion of the business situation, and E. W. McCullough, in Charge of the Fabricated Products Division of the Chamber of Commerce of the United States will speak on the subject "Trade Association in Industrial Progress."

The Dominion Engineering Works, Limited, Lachine, have secured an order to construct a 234" newsprint machine for the new mill of the Backus Brooks Company, Kenora, Ontario. The machine will be one of the largest in Canada. It is designed for a capacity of 100 tons per day, and will operate at speeds up to 800 feet per minute. The machine will be driven with the Harland electrical section drive.

PULP AND PAPER NEWS

Toronto paper mill men and merchants simply smiled at the suggestion by T. L. Church, North Toronto's member in the House of Commons, that as an aid to the development of Canada's coal supply an export duty of ten per cent be placed on newsprint to the United States.

The annual statement of the F. N. Burt Company, Limited, manufacturers of counter check books and paper boxes, was received and approved at the yearly meeting held in Toronto a few days ago. It was pointed out at the gathering that business had opened up on a better scale this year than last and that the prospects for the next nine months were very bright. During 1922 the company entered the paper drinking cup field, and had established branch offices in a number of the principal cities in the United States. It was anticipated that the manufacture of drinking cups would form a profitable branch of the company's operations.

From information gathered at the office of the Dominion Flow Meter Co., Limited, 145 Wellington Street west, Toronto, the St. Lawrence Paper Mills have gone into the matter of steam and water distribution very thoroughly, and have installed, for this purpose, sixteen Republic Flow Meters. Water meters will measure water to the mill, wood room, boilers, and general service, steam meters, general auxiliaries, heaters, make-up paper mills, turbines, etc. This will be a very interesting installation when it is finished. Indicating instruments are placed at points of consumption on each of these lines, and recording and totaling panels are all located in a central meter location, connected in such a way as to make one complete instrument panel. This centralization of control is most satisfactory, as all cost figures, records, etc., are located in the one spot without the necessity of having to walk from one end of the mill to the other, taking all the readings every day. At the same time those operating various units of consumption have the necessary indicator for proper control.

The many friends of V. T. Haney, Toronto representative of the Rolland Paper Company, are pleased o see him back at his office in the Bank of Hamilton Building, Toronto, after an extended illness following an operation.

J. G. Gibson, secretary of the Spanish River Pulp & Paper Mills, Limited, spent a few days last week at the Espanola Mill of the Company.

The Wilkinson Paper Company, 71 Wellington Street west, Toronto, have just sent out a striking and valuable piece of advertising in the form of a map of Greater Toronto, containing the street names and locations in the city. The map has been done on a fairly large scale and is a valuable addition to the wall hangings of city offices.

Gummed Paper, Limited, Brampton, Ont., have sent out samples of three of their grades of Esparto noncurling gummed paper. The company, who also manufacture cloth lined paper, water-proof lines, etc., say that business in these departments of the paper trade is fairly brisk and are looking forward to a good volume of trade during the current year.

The Sutherland Printing Shop of which W. J. Gallagher was proprietor, and the Clark Printing Company, were burnt out in a fire which destroyed the Commercial Building on Adelaide Street, Toronto, last week. The Hunter-Rose Company, printers and publishers, also suffered some damage to their plant on Shepperd Street, when fire broke out in their building, although the loss was not extensive.

The death took place a few days ago at Tonawanda, N. Y., of Mrs. Mary Berhalter in her 86th year. Deceased was the mother of John Berhalter of the sales department of the Interlake Tissue Company's head office in Toronto.

I. H. Weldon, President, and T. A. Weldon, Vice-President of the Provincial Paper Mills, Limited, head office Toronto, were in St. Thomas a few days ago attending the funeral of their father, the late James Weldon, who died as he had reached the century mark. Mrs. Weldon predeceased her husband by only a few weeks.

In the Ontario Legislature, R. R. Hall, M.P., for Parry Sound, moved the second reading of a bill to amend the Crown Timber Act, which provided that no license should be granted to cut timber from an area exceeding 61 square miles without the sanction of the Legislature, the proviso to be retroactive to January 21st, 1921. The Minister of Lands and Forests argued that the bill was out of order as it referred to the sale of Crown property and the speaker upheld his contention.

The Dunning Paper Company, a small jobbing concern on King Street west, Toronto, has made an assignment for the benefit of its creditors.

E. J. Jones, late of Bradford, Penn., has been appointed manager of the Kapuskasing mill of the Spruce Falls Company, Limited. The company states that they are just reaching the capacity of production of sulphite pulp, which is 100 tons. The entire production is being taken by the Kimberley Clark Company, Inc., for its various mills.

Regarding the expansion which has been in progress at the Thunder Bay Paper Company's plant at Port Arthur, the company states that their new equipment, which was completed on Feb. 1st, is now running smoothly, and since the date mentioned they have been producing 60 tons of pulp daily, which is double the capacity of the old plant. The company reports that this has been a very good winter for woods operations and there has been a record production at the head of the lakes. The weather has been very conducive to active operations and the bulk of the cut, which has been heavy, has now been hauled in and is on the landings.

Howard Smith, head of the Howard Smith Paper Company, Montreal, and Harold Crabtree, were in Toronto for a couple of days last week calling on the paper trade. While in the city Mr. Smith made it known that Sidney Ginger, who has had charge of the company's export business at Montreal, had completed his two year's conntract with the organization and would shortly return to England. William Aird will now have charge of export matters and general production.

The current issue of the Ontario Gazette contains notice of the incorporation of the Dominion Sales Book Company, Limited, with an authorized capital of $100,000 and head office at Hamilton. This is the company formed by L. M. Appleford, late of the Appleford Counter Check Book Company. Others amongst the incorporators are W. J. Moffatt, F. A. Magee, A. T. Enlow and F. T. Smye.

The announcement was made by President S. J. Moore, of Toronto, at the annual meeting of the American Sales Book Company in that city that while the directors did not commit themselves to any fixed policy they hoped to be able to make three payments of $1 per share each on common stock during the year, the first of which would probably be made on July 1st. This would be dependent, however, on the continuance of the present prosperous conditions of the company's business. It will be recalled that in November last the directors announced an initial dividend on common at the rate of 8 per cent to apply for the fiscal year 1922. As the common has a par value of $20, a distribution of $3 a share will be equivalent to a rate of 15 per cent. A. M. Bovier, the general manager, reviewed the company's affairs, and pointed out that the output in quantities for 1922 was the best in its history. Business for the first quarter of 1923, he added, was ahead of the corresponding period of last year. The old board of directors and officers were re-elected.

In the course of evidence given by Mr. W. A. Cunningham, general traffic manager of the Canadian Government merchant marine before the special House Committee on agricultural conditions, sitting at Ottawa, reference was made to the steamship rates on pulp and paper.

Mr. H. E. Howe, formerly manager of the lumber department of the Belgo Canadian Pulp & Paper Company, Shawinigan Falls, is now interested in the newly formed House Lumber Company, Limited, Shawinigan Falls.

Mr. L. H. Lock, of the Canadian Paperboard Company, Limited, has been elected to the executive of the Purchasing Agents' Association of Montreal and district.

A meeting of the Council of the Technical section of the Canadian Pulp and Paper Association was held in Montreal on March 28 to consider arrangements for the summer meeting and excursion. A suggestion was made that this take the form of a water-trip from Sarnia to Fort William, spending two days inspecting the new mills at Fort William and Port Arthur.

The capital of the St. Lawrence Paper Mills, Limited, has been increased from $1,200,000 to $1,700,000.

The Manitoba Pulp and Paper Company, Winnipeg, has been incorporated with a capital of $3,000,000. The plans provide for a 150 ton newsprint mill, with groundwood and sulphite mills. Should the scheme materialize, it is hoped to find a market for the production in the Prairie Provinces.

We understand that efforts are being made to resume operations at the mill of the Great Eastern Paper Company, Madeleine River, Gaspe, P.Q.

Following up their policy of protecting the forests, the Quebec Government has issued a notice closing the forests from April 1 to November. Only those who secure a permit will be allowed in the forests. The permit system, inaugurated last year, proved beneficial in the way of preventing fires.

The Nashwaak Pulp and Paper Company Limited, of St. John, and the Bathurst Company, Limited, of Bathurst were represented at an organization meeting held recently in St. John, to discuss the formation of an employers' association for the province of New Brunswick. The Nashwaak Pulp and Paper Company Limited, was represented by Howard E. Beedy, general manager. It is planned to form a provincial body to protect the employer, and with particular reference to matters concerning the Workmen's Compensation Board of New Brunswick. The formation of the New Brunswick association is under the direction of the Canadian Manufacturers Association. The lumbermen and pulp and paper men of New Brunswick have been vitally interested in the organization of this provincial body, which is expected to unite all employers in the province. The case of the Workmen's Compensation Board of New Brunswick against the Bathurst Company Limited, was before Mr. Justice Grimmer at St. John, in chancery March 22. This is a demand for the amount of levy.

With reference to the agitation in Ontario for the co-operation of the federal government and provincial government as well, in establishing former soldiers as pulpwood operators, there is ample opportunity in New Brunswick for the working out of such a plan.

The new paper mill site at St. Stephen has not been definitely selected as yet. It may be that not St. Stephen, but Moore's Mills, some miles from St. Stephen, will be chosen by the engineers representing Hollingsworth and Whitney, who will build the mill. The commercial organizations on the Maine side of the St. Croix river, have not yet relinquished hopes of finally securing the paper mill site for the Maine share. But present indications are that the mill will surely be constructed on the New Brunswick side of the river. The St. Stephen Board of Trade is working hard to secure the mill for St. Stephen.

$3,000,000 PULP MILL FOR BEZANSON, ALTA

Several despatches from the West announce that Foley, Welsh and Stewart, of Minneapolis, are setting to work as soon as the weather warrants, to build a saw-mill and pulp mill near Sturgeon Lake, Alta. They expect to build a spur line to connect with the E. D. & B. C. at High Prairie. It is said the plant when complete will entail an expenditure of $3,000,000, and will employ about 2,000 men. This is the largest enterprise yet contemplated in the north country, but seems to be the beginning of the development of the tremendous resources and an aid to the transportation problem.

BOND ISSUE BY BAY SULPHITE CO.

Following closely upon the reorganization of the directorate of the Bay Sulphite Company, Ltd., announcement has been made of an important development in the financial plans of that company. A syndicate, composed of Wood, Gundy & Company, Newman, Sweezey & Co., Hanson Bros., and Aemilius Jarvis & Co., Ltd., will commence at once to offer a new issue of $3,000,000 Bay Sulphite Company, Ltd., first mortgage, 20-year, 6½ per cent. gold bonds. The issue is made for the purpose of redeeming outstanding coupons on the $1,450,000 7½ per cent. first mortgage bonds, purchasing additional timber limits and strengthening the working capital position.

UNITED STATES NOTES

The gradual improvement in the demand for paper boxes which started last summer and fall has continued into 1923, notwithstanding that the early months of the year generally show a seasonal decline. Comparing the output for February with the corresponding month last year, as shown by the average of many plants throughout the country, an increase of 27 per cent. is indicated. This represents production not dollars of sales, which show a higher percentage of increase, due to the increased cost of materials. Chipboard sold early this month at from 60 to 67.50 a ton, compared with $35 to $40 in February, 1922. The increase is due to shortage of paper stocks and to some extent to transportation difficulties. Prices on paper boxes have advanced, though they do not reflect all of the advance in costs. The outlook for the immediate future is bright in this industry, which is a good barometer of trade in other lines. Many manufacturers have orders on their books covering the next sixty to ninety days.

Acording to an announcement made last week by officers of the American Paper and Pulp Association, Senator William E. Borah and James M. Beck, Solicitor General of the United States, will speak at the annual banquet of the Association, Thursday, April 12. The change in the program for convention and exposition were necessitated by the strikes in the paper industries of Sweden has been arranged by the securing of authorative speakers on American industries, tentative arrangements for visits by Swedish and Norwegian paper and pulp experts having been cancelled due to the labor difficulties over there. The plan of the association is to have spokesmen of different political beliefs address the meetings in order that the delegates may hear all sides of the various economic problems. Dr. Nehemiah Boynton will close the banquet with a special address.

Various divisions of the National Association of Waste Material Dealers, which held a two day session last week at the Hotel Astor, New York City, ending with a dinner Thursday night, reported very active conditions and prices 50 to 75 per cent. over those prevailing three or four months ago. The high rate of activity in most industries and soaring prices for raw materials have greatly stimulated the demand for waste products suitable for manufacturing purposes. Charles M. Haskins, secretary of the association, explained that the dealers are able to cope satisfactorily with the demand for all products, with the possible exception of waste paper and old rags. In the latter case sufficient supplies will probably appear as the price grows more attractive. The division of the association include scrap rubber, waste paper, woolen rag graders, metal, scrap iron, cotton waste, wood pulp and foreign trade. Harry R. De Groat, of A. M. Wood & Co., Inc., Philadelphia, was elected president.

The executive committee of the American Paper and Pulp Association adopted resolutions at a meeting in the Union League Club, New York, March 19, recommending that further legislation along forestry lines in New York State be delayed until a survey has been conducted to show what forest lands the State has, so that a reasonable policy may be worked out and applied to both State owned and privately owned lands. The association, which is co-operating with the American Newspaper Publishers' Association and similar organizations in the effort to get Federal legislation fixing a national forestry policy, decided to make forestry a chief subject of discussion at the coming convention. The Woodlands Section, composed of foresters employed in the industry, will discuss fundamental forestry education.

For the year ended December 31, 1922, the Union Bag and Paper Company reports net profit of $1,029,865, after depreciation and interest charges, but before Federal taxes. This is equivalent to $6.88 a share earned on $14,877,850 capital stock, against a net loss of $723,397 in the preceding year. Net earnings in 1922 amounted to $1,744,389, against $797,192 in 1921, and $5,046,300 in 1920, Depreciation, etc., was $441,244, against $266,977 in 1921. After dividends the surplus was $162,031, against a loss of $1,888,263 in the preceding year. The profit and loss surplus at the end of the year was $1,228,073.

Last week, by proclamation of Governor Smith, was Conservation Week in New York State. The observance of the week was given over by concerns, agencies and individuals interested in conservation to the dissemination of a better understanding of the benefits to be derived from the conservation of the State's natural resources, with particular reference to the protection of the forests from fire.

The Yellow Pine Lumber Company of Orange, Texas, has closed a deal for the purchase of land in Morehouse Parish, in the vicinity of Bastrop., La., on which an option was obtained two weeks ago. It has begun active construction work on a paper and pulp plant, which will be built at a cost of approximately $2,000,000.

J. D. Erskine, general agent of the Northern Assurance Company, gave the first of two lectures on "Paper Mills" before the company's senior class on fire insurance last Thursday. An interesting discussion followed the lecture which was given at 84 William Street, New York City.

Among recent arrivals in New York of trade visitors abroad several have remarked that the paper industry is profiting through the depreciation of foreign currency. Dispatches to this effect have also reached the Commerce Department recently. One of these shows that 33 printing plants and 12 paper mills are kept busy supplying Germany with its currency at the rate of 40,000,000 marks a day. The same is true in a lesser degree of Russia. In other words, says one commentator, there is no great loss without some small gain.

The air patrol maintained by the Government over the forests of Oregon in 1922 discovered 458 fires, 114 of which were first seen by airplanes. About one-fifth of the standing timber in the United States is in Oregon. The cost of this service to the Government during the last year was 10 cents per $1,000 of value, this cost being based on an estimated valuation of $500,000,000 on the timber.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, March 27.—Taken all round, the local paper market is about holding its own so far as sales are concerned. There is no rush, but business is now on a steady basis. The outlook is good, and jobbers may reasonably anticipate a satisfactory volume of sales having regard to general commercial conditions.

We have on previous occasions referred to the rising costs of pulp and paper making, due to the higher prices of supplies. We also intimated that labor was contemplating a demand for more wages. The meeting in Montreal last week of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers showed that there was a basis for the statement. The Union will ask for a return to the scale of wages given to skilled workers prior to May 1, 1921, when a reduction was adapted by an agreement which will expire on May 1st next. For the semi-skilled men it has been decided to ask for a return to the scale in effect to January 1, 1921, when it was reduced by arbitration, while the unskilled men want a minimum of 40 cents an hour, both for inside and ouside work. These demands are put forward on the ground that the cost of living has risen and that the industry can now stand it. While the mills in Canada are mainly run on the open shop principle, there is no doubt that any advance in wages agreed to by mills recognizing the Union will have an effect on practically the entire industry. It will establish a standard, which will mean an all round rise in wages.

Such an advance, combined with dearer supplies, will involve higher prices for paper. Book and writing papers are already due for this advance, owing to increased manufacturing costs, and if on top of these, wages go up, an adjustment of selling values at an early date is inevitable. With regard to newsprint, the effect of a new schedule of wages is not so distinct, but it would be reasonable to anticipate that an increased wages bill would be a very important factor in any movement looking for a $80 price for the last half of this year. The present demands of the Union represent an increase of about 15 per cent — and are, we may be sure, based on the expectation that a compromise will be effected.

The mills are not anxious to boost the prices of their commodities because of the disturbing effect on the market. They would rather have steady quotations, which would represent fair profits; put in face of higher manufacturing costs it is considered that advances in the prices of the finished products are inevitable and care only reasonable.

The call for newsprint is as good as ever. The report of the Abitibi Company shows how this branch has recovered, and that capacity production is assured for the current year. This is, of course, provided that labor does not cause any trouble. The Canadian exports for the month of February totalled 84,395 tons compared with 70,729 tons in the corresponding month last year. This brings the total for the two months of 1923 to 167,184 tons as against 138,430 in 1922. The U. S. took 78,622 tons in February compared with 65,434 tons, and for the two months 160,313, compared with 130,088 in 1922. Australia, New Zealand and British South Africa were the only other customers of not there being a falling off in the South American demand.

In most other lines there is a fair amount of buying, the mills reporting a steady demand. Book and writing papers are in good request. Our exports in these departments show increases, Australia and New Zealand took most of the shipments of book in February, while Australia was our best customer for writing paper. In kraft wrapping papers. the United Kingdom bought about half the exports of 1,935 tons in February; Australia and New Zealand also bought freely. The total for the two months of 1923 was 2,871 tons, a decrease of 120 tons, which is accounted for by the fact that Japan this year has almost dropped out of the market, while in 1922 that country was the best customer during the two months in question. In connection with this section, a report from Three Rivers states that the Wayagamack Company will shortly increase its production of kraft paper by operating two additional machines, bringing up the output to 165 tons per day. Tissus continue to be in strong demand. The paper stock department is very firm, with an upward tendency. All offerings are readily absorbed. Old cotton rags and new cuttings are in request, with many inquiries for the former from American buyers.

The feature in the pulp market is the increased sales of sulphite together with a firmer tone. Sulphite has for a long time showed little life, but there is now a prospect of more activity. The exports in February were 12,950 tons, a gain of 2,800 tons as compared with 1922; for the two months the exports were 28,643 or 7,400 tons more than in 1922. The united States was by far the best customer. Bleached sulphite is also being brought more freely, the exports in February totalling 12,526 tons, a gain of nearly 4,000 tons., while during the two months' period shipments were 26,214 tons, an advance of 5000 tons. The United States and Japan were the only customers. Groundwood is moving very well, with the price about $37. f.o.b. mill. In February our mills exported 15,464 tons, 2,240 tons more than in 1923; in the two months of this year the total was 45,356 tons, an increase of 3,500 tons. The United States and the United Kingdom were the only buyers Sulphite pulp was exported to the U.S.A. to the extent of 9,525 tons in February, a decrease of 1900 tons, while for the two months the exports were 20, 127 tons, a falling off 1,100 tons.

Ontario Market News

A canvas of the pulp and paper situation in Ontario reveals the fact that March has been rather a disappointment as far as volume of business is concerned although there is no disposition to look upon the present dullness other than in the light of a temporary character. The fact remains, however, that trade is quiet for the moment. Jobbers are not handling the amount of business they were looking for at this season and there is a marked lack of activity in the printing trades. Distributors of papers are not laying in any stocks of size and they, on their part, say that what orders they are taking are small in volume and individually small. There is, of course, a fair amount of general business being done in the paper line but there does not appear to be any disposition to buy either paper or printing in any quantity and new business is hard to get. On the other hand some departments of the paper trade, notably that of the paper converters, is quite busy. Manufacturing stationers are running full capacity on blank books, papeteries and other lines and the envelope trade is good. A temporary inactivity, however, appears to have struck the book, bond, writing and wrapping paper sections, although dealers and manufacturers are confident that April will see a return to active selling conditions.

PULP. — Groundwood pulp continues to show an easy tendency and there is considerable of it in the market at prices ranging from $40.00 to as low as $35.00. Sulphite is stiffening somewhat and prices are firm although manufacturers are not getting any more for their product as yet. This is instanced by the fact that a week or two ago if a paper manufacturer had a big order to place for sulphite he could negotiate a pretty good price for himself but this cannot be done just now. Bleached sulphite is quoted at $90 and up at the mill, with unbleached at all the way from $65.00 to $80.00 and news grade at $65.00. Book grade sulphite is selling at from $75.00 to $80.00.

BOOKS, BONDS AND WRITINGS, — While book paper mills manufacturing on contracts with publishers are busy, there is said to have been a falling off in production by the writing paper and bond mills. While most of the mills are running full time they are not operating at capacity as the orders they are receiving are small individually and jobbers are not inclined to buy stocks of any size ahead. Instead of stocking up for two or three months ahead as is customary in times of activity in trade they are now only buying from hand to mouth. It is known that manufacturers lately have been discussing the question of prices, some of them taking the ground that increases are necessary if profits are to be maintained and others maintaining that reductions would have a more stabilizing effect on the market. The uncertainty as to the future appears to have had some effect on the placing of orders with the mills by the jobber.

WRAPPING PAPER. — There has been a noticeable falling off in business both in the wrapping paper and paper bag trade and both the distributors and the manufacturers report trade as quiet. There is talk of an increase in the price of kraft bags as a possibility of the near future but no advance has been recorded as yet.

TWINE. — The paper jobbers handling twine report a dullness in business with an unusually light demand just now. With the market in its present condition wholesalers say there is very little profit in handling jute twines, although the high grades yield a fair margin. Prices in all lines are holding firm. Dealers say that should the Russian stocks of hemp come onto the market it will have a tendency to lower the price of the high grade twine.

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NEW YORK MARKETS

New York, March 24—(Special Correspondence)—Trade in paper of various kinds continues at a rapid clip. There is an increasing demand for practically every grade of paper, and manufacturers are being rushed to take care of all the wants of their customers; in fact, reports from producing centres tell of paper mills operating at close to maximum output with very little of the current production being put in store. Demand from printers, publishers and the other large consumers is such as to absorb virtually the entire output at present, and one of the strong and satisfying features of the situation is that manufacturers have enough orders on their files to keep them running at the prevailing rate for some weeks to come.

It is conservatively estimated that paper mills of the United States, taken as a whole, are sold up for close onto two months. This means that buyers who failed to anticipate their requirements are at the moment having some difficulty in securing prompt deliveries. Manufacturers naturally are filling old orders first and it will take some time for them to catch up with the business already on hand. This in itself makes for a firm market condition, and certainly there are at present no indications that buyers will not accept deliveries in due time of all the paper they have placed orders for. There have been occasions in the past when paper mills were well sold up and all of a sudden some drastic changes in the market or in general business conditions developed resulting in cancellation of most of the orders for paper. Everything now appears favorable, however, for consumption of paper to continue at the prevailing high level, and for consumers to keep on buying in a steady way against actual requirements.

Observing the New York newspapers, it seems that consumption of newsprint has undergone a further increase during the past fortnight. This is the height of the pre-Easter shopping season, and department stores and merchants in common are using a tremendous amount of display advertising to attract customers to their counters. One local afternoon daily yesterday printed an issue of 44 pages, another put out an issue of 32 pages, and the remaining evening papers, printed issues ranging from 20 to 30 pages. One of the New York morning papers is printing an issue almost every weekday with the exception of Saturday of over 40 pages; the Sunday issues are larger than ever; all in all it is plain to be seen consumption of print paper is at an exceptionally high point. Under the circumstances, it is to be expected that prices of newsprint should be strong. Mills are sold well ahead and practically up to their capacity, and it is no easy matter to locate sizeable supplies of newsprint for the transient trade. With the first quarter of the year almost over and no announcement has been forthcoming from manufacturing sources, it is believed that no change will be made in newsprint quotations at the beginning of the second quarter. However, there are many in the trade who expect a revision upward at the end of the second quarter. Most of the contracts now extant terminate then and it is believed manufacturers will mark up prices, particularly since wages of mill workers are now to be increased and since the cost of raw materials show no signs of receding.

Book paper is quotably firm and is moving in large volume. There has been a remarkable increase in ad-

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vertising in magazines and trade periodicals in recent months, and consumption of book is showing steady growth. Mills are running full and have no difficulty finding a ready outlet for their product. Prices range around 7 cents a pound f.o.b. New York on machine finished book, 7.25 cents on super book and from 9 cents upwards on coated book paper.

Wrappings are enjoying a brisk demand and are holding strong in price. One of the leading manufacturers in the East reports securing 7.25 cents a pound New York for domestic kraft wrapping, and No. 1 jute is quoted at around 8.15 cents per pound. Tissues are moving well at a price basis of about $1 a ream for No. 1 white tissue, with No. 2 white and No. 1 manila quoted at around 85 cents per ream.

Orders for fine papers are coming in at a steady rate and are of large number though the average buyer is operating on a reserved scale, purchasing only against direct needs. Prices of bonds and ledgers are firm at the advanced levels recently put into effect, and higher prices seem in prospect.

There has been some talk of recession in board quotations this week but, if true, it has not been confirmed by the large mills. The biggest producers of board are quoting $70 a ton on news and $65 on plain chip f.o.b. New York, and appear to be getting enough business to warrant maintenance of these prices. On the other hand, it is probable that some of the small manufacturers have shaded these prices to some extent.

GROUND WOOD—Prices of mechanical pulp are rather irregular. Reports from domestic producing quarters tell of steadiness in quotations, with grinders fairly busy and readily disposing of their output; on the other hand, it is said ground wood has been bought in Canada at low prices, down to $35 per ton at grinding plants having been mentioned. This price is substantially under that reported prevailing on domestic pulp, grinders in New York State and Maine said to be receiving around $42 a ton for their pulp. Indications are that ground wood consumption is heavy. Moreover, mill stocks are light, probably lighter than in several years. Under these circumstances it is difficult to reconcile any decline in prices. The only explanation apparently is that producers have been enabled to increase their grinding operations of late and therefore are pressing some supply of ground wood onto the market.

CHEMICAL PULP—Firmness in chemical wood pulp is noted on all sides. With the lockout in Swedish mills continuing and production there still nil, importers are bullish in their views regarding pulp values, and this feeling of confidence is spreading to domestic manufacturers. No longer are sellers pushing sales of sulphite and kraft, rather they are marking up prices in every subsequent sale, and indications are that market levels are likely to touch high levels within the next several months unless some unforseen developments occur in the interim. Latest reports say that there is a possibility of the strike situation in Sweden being terminated on April 1; however, it is not expected here that production will be resumed befort the middle of next month even should the lockout be officially declared off on April 1 since the Swedes celebrate a series of holidays immediately following Easter, which would automatically halt the manufacture of pulp.

Import concerns are naming stiff prices on pulp. Foreign No. 1 unbleached sulphite is quoted at 3.25 cents a pound ex dock New York, easy bleaching sulphite at around 3.35 cents, and Swedish kraft pulp at 3.20 cents and higher. Spot stocks are said to be dwindling, and fresh arrivals are on the decline, with the great bulk of supply arriving constituting contract pulp. Domestic grades are quoted at around 3 cents a pound at producing mills for No. 1 unbleached sulphite, 2.85 cents for news grade sulphite, 3.25 cents for domestic No. 1 kraft, and 4.25 cents for bleached soda pulp.

RAGS—Rags suitable for roofing paper mills continue to climb in price and further advancement has been noted this week. Domestic roofing stock has worked up to a price basis of about 1.90 cents per pound f.o.b. New York, for No. 1 packing, and 1.80 cents for No. 2 grade, while foreign dark cottons have sold freely for April shipment from primary sources in Europe at 1.65 cents landed New York. Felt paper mills have bought in heavy amounts, and have indicated by their willingness in meeting the prices asked that they are in need of rags.

Old whites are firm and rising. It is reported that extra choice No. 1 repacked whites have brought as much as 8 cents a pound in sales to fine paper mills, while the average run of these rags sell for 7 cents and more. Thirds and blues are higher, dealers generally quoting 2.60 cents and more for repacked and around 2.25 cents for miscellaneous packing. New cuttings are very firm and are moving in consistently good amounts. No. 1 white shirt cuttings continue to be quoted at about 14 cents a pound f.o.b. New York.

PAPER STOCK—The market for old paper is lacking in feature. Demand for a majority of grades is fair but there is not the snap to buying as was noted recently, and prices in some cases have eased off slightly this week. It appears that a good many mills have large amounts of wood pulp on hand which were received during the past several months from foreign sources, and that they are using up this raw material at present and thereby neglecting to some extent waste paper, thus making for a slower movement of the latter. No. 1 mixed paper has declined to where purchases by board mills down to 1.05 cents per pound New York have been reported, though 1.10 cents is a more representative market price. Folded newspapers are selling at 1.30 cents New York, No. 1 overissue newspapers at 1.60 cents, white news cuttings at 2.30 cents, old No. 1 kraft paper at 2.25 cents, and heavy magazines at 2.40 cents. Shavings hold steady at about 4.25 cents per pound New York for No. 1 hard white, and 3.60 cents for No. 1 soft white.

OLD ROPE AND BAGGING—A steady demand exists for old manila rope and this article is freely bringing 6.75 cents per pound at shipping points in sales to paper mills, with foreign manila rope fetching around 6.50 cents. Some consumers are said to be absorbing about all of the strictly No. 1 domestic rope they can find at 7 cents, and a strong factor in the market is that stocks are far from large. A little better demand is noted for old bagging. Roofing paper mills are buying in increased quantity at about 1.10 cents per pound New York, and tissue paper mills offer around 1.25 cents for No. 1 scrap bagging. Gunny bagging is firm at 1.65 cents for domestic, and an average of 1.65 cents for foreign.

A few drinks of beer—three men in a motor car, hurrying to a picnic smash up— one killed—two injured — in accident on the Hamilton, Ont., Highway recently.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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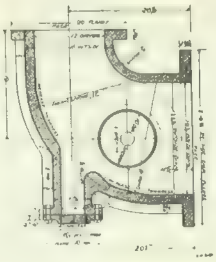

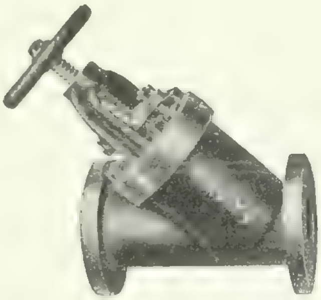

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:-: EDITORIAL :-:

SHIPPING RATES BLOCKING BUSINESS

There are four excellent ways of killing a profitable business. The first is to make poor or unsuitable goods, the second is to permit excessive manufacturing costs; the third is to exact an unfair profit, and the fourth is to suffer the handicap of exorbitant transportation costs. Canada's pulp and paper products are known and favorably received throughout the world for their high quality, and, other things being equal, in fact, even in spite of some handicaps, the manufacturing costs of the Canadian products are so closely watched and ably controlled by the management of our mills, and efficiency of our workmen, that they are able to compete with products imported into any country from any other part of the world. Furthermore, Canadian manufacturers are satisfied with a fair margin of profit, as is adequately proven by the present case of newsprint prices and the figures charged for other grades of pulp and paper.

The fourth factor mentioned above, however, is a very serious handicap to the expansion of Canadian trade in certain quarters. Not only is the condition a serious one for the expansion of Canadian trade and the employment of Canadian workmen and capital, but it is also interfering with our relations with other countries. The fact that other countries are looking with some concern, and considerable dissatisfaction on the matter of ocean freights is shown in the following quotation from a recent issue of "The World's Paper Trade Review," published in London:

> Constantly have British traders to complain of the high ocean freights which are imposed upon them by shipping rings. It is not only in one, but in every direction, that the fault lies. A case in point are the rates from Atlantic to British ports. These are probably, considering the volume of trade, the highest in existence, and are controlled by a ring of steamship companies who work together as the Atlantic Conference. That the conference rates are not justified is shown by those of an independent company who are outside the ring. Thus the Conference rate on paper is 50 cents per cwt., while the Reardon Smith Lines, which are not subject to the dictation of the ring, quote 30 to 35 cents per 100 lbs. Moreover, we understand they are giving excellent service. In these days of severe competition in paper prices, the question of freight costs is a vital one. There is good ground, therefore, for the argument that freight rates should be subject to reasonable competition and not dictated by a ring of steamship owners.

It is perfectly obvious that an increase of 60% over a figure which gives an adequate return on carrying goods across the Atlantic is little short of a crime. Certainly the Dominion Government should get busy on a situation of this kind, find out the truth as quickly as possible and immediately take measures to relieve our industry of such a serious and unnecessary handicap.

Not only are the freights from Atlantic ports to Great Britain unnecessarily high, but they are entirely out of proportion to transportation charges to other parts of the world.

CUTTING DOWN EXPENSES

In the natural course of things it cannot be long now before the Budget is "opened", as the phrase runs, in Parliament. While speculation as to its probable contents must necessarily be in the nature of guess-work, at the same time it would seem highly probable that these will not include any downward revision of general tariff duties. If we are right as to this, protests may be expected from some of the Progressives and from an occasional Liberal of pronounced Free Trade proclivities, like Mr. A. R. McMaster, M.P. for Brome. But such protests, even if not merely formal, are likely we imagine, to weigh little with the Government. For just now, when business conditions seem to be in process of definitely picking up, is no time for the introduction of radical tariff legislation with its inevitable accompaniment of business and commercial unsettlement.

It seems likely that those who advocate tariff reduction will have to content themselves with the commercial treaties with France and Italy as tending in the direction desired by those of their school of fiscal thought. In addition, they are likely to be somewhat appeased by the extension to Great Britain of the special rates accorded to France and Italy. But we confess we should be surprised if the Government were to lower the rates on British imports, except as just suggested, in order to make up for such diminution in the British preference as may be resultant from the negotiation of the treaties with France and Italy.

Indeed, we would hazard a guess that, in view of the imminent competition of certain lines of British imports — and very particularly imports of textiles — with some of our own domestic manufactures, a certain amount of pressure is likely to be brought to bear on the Government by manufacturing interests here to increase the protection against British importations in some respects.

But, whatever the nature of the forthcoming Budget in such respects, it is sincerely to be hoped that it will not be a Budget providing for further increase in taxation. For if the trade of Canada is to make a recovery that can fairly be termed rapid, it is essential that there should be not an increase, but a reduction, in taxation. The present Finance Minister, during the past year, has more than once taken occasion to emphasize the necessity for the country to practise economy, and has himself made an earnest effort to reduce expenditures. But in spite of this the country has not succeeded in reducing its national debt. There are only two ways in which this can be done — either by increased taxation or by further reduction in expenditure. As we have just said, the adoption of the former alternative is bound to hinder the expansion of business. Accordingly, the Dominion Government must continue the lead it has given the country in the matter of undertaking retrenchments.

Before today we have called attention to the far too facile tendency of large sections of the public to regard colossal expenditures as unavoidable. This is true not only of large sections of the public, but also, unfortunately, of some Governmental authorities as well. And the time has come to call a halt to all this.

As a people, we unquestionably need to practise economy, both in public affairs and also individually, more than we are prone to do. Indeed, the equanimity with which large sections of the public are disposed to regard colossal expenditures probably has its rise in the individual extravagance which is all too prevalent in this country nowadays. There is great need among us in this country today for the placing of the right emphasis on the right things of life — for the putting of first things first. Addiction to extravagance saps the foundations of good citizenship. For just as it is true that no person can practise thrift without being a better citizen, so is it equally the case that the will and the moral fibre are weakened by the placing of a false estimate on the pleasures that lavish spending can bring. Thrift has a moral, as well as a material value alike for the individual and for the nation. It is a character tonic for both. And, both individually and collectively, we need to lay that truth to heart if we are to cope successfully with the many and complex problems presented by the days in which we are living.—A.R.R.J.

A CORRECTION

In the March 15th issue of the "Pulp and Paper Magazine" an error occurs in the article on page 282 dealing with the sale of some of the Riordon Company's outlying limits. The figure of $2,500,000 is correct but the area should be about 2,600 square miles, including the Nation Limits, not 15,000 sq. miles.

COBWEBS

Our congratulations to the Belgo Paper Company, Limited. This mill broke all previous records on the 28th of March by turning out a total of 297 tons of newsprint paper from five machines. Machine No. 5, which is a 232″ machine recently furnished by Charles Walmsley & Company, and put in operation only about a month ago, made 81 tons. The normal speed of this machine is 750 feet. It is interesting to note here that the Belgo Paper Company have placed an order for No. 6 paper machine with the Dominion Engineering Works of Montreal. This machine is to be practically identical with No. 5, and is scheduled to be in operation by October 1st, next.

LETTERS TO THE EDITOR

More Danger ahead!

In a few more weeks time the forest fire season will be upon us again with all its horrors, its destruction of real and potential wealth, its loss of property, and perhaps also its toll of human lives. Every layman should know, that our supply of available raw materials for the manufacture of pulp and Paper is getting dangerously low, so low in fact, that the existence of the Press, one of the most important factors in moulding public opinion is threatened. The daily press, as well as lumber journals, pulp and paper magazines, forestry publications and others have given in the past their space and time unstinted to the teachings of "the gospel of forest conservation". Next to the Press, the Church is recognised as the most important element in moral education, also the schools and school teachers must be approached to lend a helping hand in educating the people, part owners of Canada's Forestwealth, to the fact that forest fires are not only crimes against the Creator, but are also stupidities, occuring nowhere in the world in such numbers (4000 last year) except in Canada and in the U. S. A.

Stop forest fires of all description, in virgin timber and **especially in second growth,** from which we must ultimately draw our supply, and Canada will become one of the most prosperous nations on earth, keep on burning and wasting, and in a century we may share the fate of China! Which is it to be?—Fred Brown, Fort Frances, Ont.

WELCOME

You are welcome at the Pulp & Paper Booth, No. 22. Our desire is to aid the Pulp and Paper Industry What can we do for you?

The Editor knows of a mill that makes bleached sulphite pulp and requires a chemist and a superintendent. It is a very desirable connection. Any communications will be passed on in confidence.

WATER POWER RESOURCES OF CANADA

(Furnished By the Department of the Interior, Dominion Water Power Branch)

The continued growth of hydraulic power installation in this country to the present total plant capacity of 2,973,759 h.p. and the direct dependence of Canadian industry as a whole on hydraulic and hydroelectric enterprise makes it a matter of some importance that existing research into water power resources be periodically brought to date and made available for public study.

Water power is in itself one of the country's most basic and valuable natural resources, and the capital invested in its development, well over half a billion dollars, makes it also one of our greatest single industries.

Knowledge of this resource is far from complete and information in many details is conflicting, but at the present time, largely as a result of the work of the Dominion Water Power Branch of the Department of the Interior a great mass of reasonably accurate as well as considerable specific data is now on file for the use of engineers and others interested. Every effort is made to keep this material constantly up to date.

During the past three years all existing stream-flow and power data available from Federal, Provincial and private sources, have been systematically collated, reanalysed and coordinated with a view to preparing revised estimates of available power based on uniform methods of computation and arrangement.

Basis of Computation

The figures for undeveloped water power listed in Table I are based upon rapids, falls and power sites of which the actual existent drop or the head possible of concentration, is definitely established or at least well authenticated. Many rapids and falls of greater or lesser power capacity are scattered on rivers and streams from coast to coast which are not as yet recorded, and which will only become available for tabulation as more detailed survey work is undertaken and completed. This is particularly true in the relatively unexplored northern districts. Nor is any consideration given to the power concentrations which are feasible on rivers and streams of gradual gradient, where economic heads may be created by the construction of power dams, excepting only at such points as definite studies have been carried out and the results made matters of record.

In brief, the figures hereunder are based on definite rapids, falls and power sites, and may be said to represent the **minimum water power possibilities** of the Dominion.

The power estimates have been calculated on the basis of 24-hour power at 80 p. c. efficiency for conditions of "Ordinary Minimum Flow" and "Estimated Flow for Maximum Development." The "Ordinary Minimum Flow" is based on the averages of the minimum flow for the lowest two consecutive seven day periods in each year, over the period for which records are available. The "Estimated Flow for Maximum Development" is based upon the continuous power indicated by the flow of the stream for six months in the year. The actual method to determine this flow is to arrange the months of each year according to the day of the lowest flow in each. The lowest of the six high months is taken as the basic month. The average flow of the lowest seven consecutive days in this month determines the maximum for that year. The average of such maximum figures for all years in the period for which data are available is the estimated maximum used in the calculation.

This estimated maximum development is based upon the assumption that it is good commercial practice to develop wheel installation up to an amount, the continued operation of which can be assured during six months of the year, on the assumption that the deficiency in power during the remainder of the year can be profitably provided from storage or by the installation of fuel power plants as auxiliaries. The correctness or otherwise of this assumption for any particular site can only be definitely settled by careful consideration of all circumstances and conditions pertinent to its development. The method, however, enables us to make a fairly satisfactory over-all estimate of the maximum hydraulic power available as distinctive from the estimated ordinary minimum power available.

Available and Developed Totals

The known available water power in Canada, from all sources and within the limitations outlined, is 18,255,000 h.p. for conditions of ordinary minimum flow and 32,076,000 h.p. under a flow estimated for maximum development, i.e. dependable for at least 6 months of the year.

It is believed that these are conservative estimates since an analysis of the water power plants scattered from coast to coast concerning which complete data are available as to turbine installation and satisfactory information as to stream flow, gives an average machine installation 30 p. c. greater than the six-month flow maximum power. Applying this, the figures quoted above, therefore, indicate that the **present recorded water power resources** of the Dominion will permit of a turbine installation of 41,700,000 h.p.

The total installation to date in waterwheels and turbines through the Dominion is 2,973,759 h.p. In other words the present turbines installation represents only **7 per cent** of the recorded water power resources.

Current Progress

The sustained, and in many cases increased earning power of existing hydro-electric organizations, both privately and publicly owned, during the past few years of reaction, depression and deflation following the war stimulus has been reflected in the excellent treatment of the securities of these concerns on the various financial exchanges, and has created a most favorable impression on capital, and generally established a public confidence that is proving of inestimable value in the further promotion and growth of hydro-electric enterprises.

The period of high and uncertain construction costs contiguous with war time conditions is definitely passing. Works which a few years ago would not be undertaken by contractors except on a cost plus basis can now be met by simple inclusive tender. Labor problems are slowly stabilizing themselves. The power industry has established its capacity to manufacture cheaply and market its wares profitably under trying and exacting circumstances. There seems little to impede and much to encourage increased development.

It is not surprising therefore that many large developments are under way and many others under consideration so that a continuation of the healthy progress of new installation during the last two years, may be looked forward to with confidence.

The progress of development is somewhat difficult to follow from year to year because the year is too short an interval. From three to five years or even longer often elapses between the first consideration of development and the delivery of power. Again most projects commence with an initial installation much less than the ultimate projected capacity and new units of machinery are installed from time to time as the load develops. In other words what may be called the scoring column often does not reflect new construction for some years after such construction has been actively under way, but continues to record new scores from old developments.

Utilization of Developed Water Power

The 2,973,759 h.p. at present installed in this country may be classified as follows. (See Table 2).

2,204,486 h.p. in central stations for general distribution for all purposes.

484,228 h.p. installed in pulp and paper mills, not including 160,577 h.p. purchased by pulp and paper companies from central stations.

285,045 h.p. installed in industries other than central stations and pulp and paper mills.

The total installation for the Dominion averages 338 h.p. per thousand population, a figure which maintains Canada's position as second only to Norway in the per capita utilization of water power among the countries of the world.

Water Power in the Central Station Industry

Modern developments in high tension electrical transmission, which permits the economic transportation of power at small loss over relatively long distances has made possible the use of hydraulic power for manufacturing in established centres where labor is plentiful and of a permanent character, with shipping and distributing facilities readily at hand. Such centres, with their variety of manufacturing needs and processes, street railways to be operated, buildings to be lighted and heated, municipal needs for street lighting and water pumping, form an ideal market for the product of the central station industry attaining enormous proportions in a relatively short period of time.

Throughout the Dominion at present there are 273 hydro-electric central stations with an installed turbine capacity of 2,204,486 h.p. or a generator installation of 1,636,084 kv. a. (see Table No. 3) of which totals 1,556,956 h.p. is installed in commercial or privately owned stations while 647,560 h.p. is installed in municipal or publicly owned stations.

The units vary in size from 10 h.p. to the 55,000 h.p. turbines recently installed in the Queenston development of the Ontario Hydro-Electric Power Commission, and which are the largest operating water turbines in existence at the time of writing. The turbine units in the industry average 3,483 h.p. while the average installation of the central stations is 8,075 h.p.

Unremitting progress in operating efficiency and wider fields of service are being constantly maintained by the operating companies and interested government departments. New units are being installed, new plants constructed new projects investigated and research instigated to meet the growing domestic and industrial demand and to link up the hitherto isolated small centres and rural districts with cheap hydro-electric power.

Water Power in the Pulp and Paper Industry

Pulp and paper manufacturing is a typical and pre-eminent Canadian industry with a future of almost unlimited prosperity ahead of it, the result of two natural advantages of almost equal moment, namely, an abundant supply of growing pulpwood and cheap accessible motive power in large quantities. The importance of cheap power lies in the fact that it takes practically 100 horse power to produce one ton of paper per day. It is not surprising therefore that motive power used in this industry is almost altogether restricted to hydraulic energy and that Canada's premier advantage and position in the pulp and paper field rests on adequate and abundant water power well distributed among extensive forest reserves.

Water power is operating 113 pulp and paper mills in Canada, 644,805 h.p. being employed. Of this total, 484,228 h.p. is **actually installed** in connection with the mills and 160,577 h.p. is **purchased** from hydro electric central stations.

The innovation of the electric drive is having a marked and favorable influence on pulp and paper manufacturing processes. It makes possible the centralized operation of fewer and larger mills receiving power from several power sites together with the further advantage of uniform speed and better control in grinding, thus lessening costs of operation, construction and shipping. Of the 484,228 h.p. **actually installed** in pulp and paper mills 183,311 h.p. is used in the electric drive, besides which there is 160,577 h.p. of hydro-electric energy purchased from central stations, bringing the total horse power employed in the electric drive up to 343,888.

Quebec and Ontario possess the largest natural pulpwood areas in Canada and they lead in pulp and paper production with 320,192 h.p. utilized in this industry in Quebec and 243,146 h.p. in Ontario; other producing provinces are, British Columbia 48,800 h.p., New Brunswick 14,668 h.p. and Nova Scotia 17,900 h.p., total installation for pulp and paper mills, 644,805 h.p.

Past and Future Growth in Utilization of Water Power

The growth of water power developments in Canada has been striking. Total installed horse power, has grown from 975,000 to 2,974,000 since 1910, central station installation from 605,000 to 2,204,000 h.p. and pulp and paper installation from 191,000 to 484,000 h.p.

There is every reason to believe that this rate of growth will not diminish. New uses for electric current of the greatest import in industrial processes and services are being constantly discovered. Canada's strategic advantage in the location of large reserves of water power within transmission distance of her centres of population should attract special industries to these centres in increasing numbers. Population follows industry and at once an added market is created for power for domestic and municipal uses. All the modern tendencies in the utilization of cheap power indicate that the rate of growth of hydro-electric development in Canada will increase rather than lessen.

Should the rate of installation since 1910 be maintained at its present rate there will be installed in 1925, 3,360,000 h.p.; in 1930, 4,110.000 h.p.; in 1935, 4,800,000 h.p.; and in 1940, 5,600,000 h.p. These growth figures are considered conservative. Available reserves are more than ample to take care of these future demands, as outlined, for a long time to come.

The water power now developed in Canada represents an investment of over $620,000,000. In 1940 should the rate of growth in installation during the past fifteen years be continued, this investment will have grown to over $1,100,000,000. The present development represents an annual equivalent of 26,700,000 tons of coal which, valued at $10 per ton, represents $267,000,000. In the year 1940 these annual figures will, with the foregoing assumption, have become 30,000,000 tons and $500,000,000. These figures are striking evidence of the outstanding importance and necessity of an intelligent administrative policy governing the development of our water power resources.

TABLE I
Available and Developed Water Power in Canada

Feb. 1, 1923

Province	Available 24 hour power at 80% efficiency.		
	At ordinary min. flow h.p.	At est. flow for max dev. (Dependable for 6 mos. h.p.	Turbine Installation h.p.
1	2	3	4
British Columbia	1,931,142	5,103,460	328,977
Alberta	475,281	1,137,505	33,067
Saskatchewan	513,481	1,087,756	....
Manitoba	3,270,491	5,769,444	134,025
Ontario	4,950,300	6,808,190	1,299,230
Quebec	6,915,244	11,640,052	1,073,883
New Brunswick	50,406	120,807	42,039
Nova Scotia	20,731	128,264	47,100
Prince Edward Island....	3,000	5,270	2,239
Yukon & N. W. Ter. . .	125,220	275,250	13,199
	18,255,316	32,075,998	2,973,759

The figured listed in Columns 2 and 3 in the above table represent 24-hr. power and are based upon rapids, falls and power sites of which the actual existent drop or the head possible of concentration, is definitely known or at least well established. Many rapids and falls of greater or lesser power capacity are scattered on rivers and streams from coast to coast which are not as yet recorded, and which will only become available for tabulation as more detailed survey work is undertaken and completed. This is particularly true in the more unexplored northern districts. Nor is any consideration given to the power concentrations which are feasible on rivers and streams of gradual gradient, where economic heads may be created by the construction of power dams, excepting only at such points as definite studies have been carried out and the results made matters of record.

The figures in Column 4 represent the actual water wheels installed throughout the Dominion. These figures should not be placed in direct comparison with the available power figures in Columns 2 and 3 for the purpose of deducting therefrom the percentage of the available water power resources developed to date. The actual water wheel installation throughout the Dominion averages 30 p.c. greater than corresponding maximum available power figures calculated as in Column 3. The figures quoted above therefore indicate that the **at present recorded water power resources** of the Dominion will permit of a turbine installation of **41,700,000 horse power.** In other words, the present turbine installation represents only **3 per cent** of the present recorded water power resources.

The above figures may be said to represent the **minimum water power possibilities** of the Dominion.

As illustrative of this the detailed analyses which have been made of the water power resources of the provinces of New Brunswick and Nova Scotia have disclosed most advantageous reservoir facilities for regulating stream flow and it is estimated that the two provinces possess within their respective borders 200,000 and 300,000 commercial horse power. These figures provide for a diversity factor between installed power and consumers' demands.

TABLE II
Developed Water Power in Canada

Feb. 1, 1923

Turbine Installation in H.P.

Province	in Central Stations	in Pulp and Paper Mills	in other Industries	Total	Population Census of June, 1921	Total Installation per 1000 population
1	2	3	4	5	6	7
British Columbia . .	227,401	48,800	52,776	328,977	524,582	627
Alberta	32,380	....	687	33,067	588,454	56
Saskatchewan	....	....	....	....	757,510	....
Manitoba	117,625	....	16,400	134,025	610,118	220
Ontario	1,018,853	171,024	109,353	1,299,230	2,933,662	443
Quebec	761,480	231,737	80,666	1,073,883	2,361,199	455
New Brunswick. . .	21,113	14,668	6,258	42,039	387,876	108
Nova Scotia	15,346	17,999	13,755	47,100	523,837	90
Prince Edward Is.. .	288	....	1,951	2,239	88,615	25
Yukon	10,000	....	3,199	13,199	4,157	3175
Canada	2,204,486	484,228	285,045	2,973,759	8,788,483	338

Column 2 includes only hydro-electric stations which develop power for sale.
Column 3 includes only water power **actually developed** by pulp and paper companies. In addition to this total, pulp and paper companies purchase from the hydro power central stations totalled in column 2, 72,122 h.p. in Ontario and 88,455 h.p. in Quebec. The total hydro power utilized in the pulp and paper industry is therefore **644,805, h.p.**
Column 4 includes only water power **actually developed** in connection with industries other than the central station and the pulp and paper industries. These industries also purchase blocks of power from the central stations totalled in Column 2.
Column 5 totals all turbines and water wheels installed in Canada.
Column 6 total population includes 7988 in North West Territories and 485 in the R. C. Navy.
Column 7 averages the developed water power per 1000 population.

TABLE III
Developed Water Power in Canada Utilized in the Central Station Industry.

Feb. 1, 1923.

Province	Commercial Stations			Municipal Stations			Total Installation				
	No.	Installation		No.	Installation		No.	Generator K. V. A.	H. P. per turbine unit	H. P. per Station	Total Turbine H. P.
		Generator K. V. A.	Turbine H. P.		Generator K. V. A.	Turbine H. P.					
1	2	3	4	5	6	7	8	9	10	11	12
British Columbia	[illegible]	[illegible]	[illegible]	8	6,353	10,045	31	148,039	3,990	7,335	227,401
Alberta	3	22,250	32,380		...	....	3	22,250	2,491	10,793	32,380
Saskatchewan		....	....		...	....	....	....	.....	......	....
Manitoba	3	37,350	50,400	2	57,312	67,225	5	94,662	5,881	23,525	117,625
Ontario	67	387,159	492,025	37	353,362	526,828	104	740,521	3,742	9,796	1,018,853
Quebec	77	582,413	743,855	16	13,202	17,625	93	595,615	3,541	8,188	761,480
New Brunswick	7	6,585	9,203	3	9,363	11,910	10	15,948	960	2,111	21,113
Nova Scotia	8	1,479	1,449	11	11,239	13,897	19	12,718	667	808	15,346
Prince Edward Is.	7	331	288	..	....	....	7	331	32	41	288
Yukon	1	6,000	10,000	..	....	....	1	6,000	5,000	10,000	10,000
Canada	[illegible]	1,185,253	1,556,956	77	450,831	647,530	273	1,636,084	3,483	8,075	2,204,486

Commercial Stations include all privately owned.
Municipal Stations include all publicly owned.
Note — Statistics in this table are based upon a census of the industry made by the Dominion Bureau of Statistics in co-operation with the Dominion Water Power Branch.

TABLE IV
Developed Water Power in Canada Utilized in the Pulp and Paper Industry

Feb. 1, 1923.

Province	Installed and Purchased Power - - H.P.						
	Turbine Installation in the Industry						
	No. Mill	Direct Drive	Hydro-Electric Drive	Total	Purchased Hydro-Electric Power	Total Hydro-Elec. Col. 4 & Col. 6	Total Utilized in the Industry Col. 5 & Col. 6
1	2	3	4	5	6	7	8
British Columbia	5	27,975	20,825	48,800	....	20,825	48,800
Ontario	41	89,830	81,194	171,024	72,122	153,316	243,146
Quebec	54	162,825	68,912	231,737	88,455	157,367	320,192
New Brunswick	3	2,368	12,300	14,668	......	12,300	14,668
Nova Scotia	10	17,919	80	17,999	....	80	17,999
Canada	113	300,917	183,311	484,228	160,577	343,888	644,805

Column 3 includes all turbines actually installed in the industry and **directly** driving mill equipment.
Column 4 includes all turbines actually installed in the industry and transmitting power through **electric** drive.
Column 5 totals the turbine capacity actually installed in the industry.
Column 6 includes only power purchased from hydro-electric central stations for the operation of pulp and paper mills.
Column 7 totals the hydro-electric power used in the industry.
Columns 8 totals the water power used in the industry.

Paper Makers' Felts*

By H. F. Obermanns

Superintendent Hammermill Paper Co.

There is perhaps no other article in daily use in a Paper Mill which is treated with as little consideration as the Paper Makers' Felts. The average machine tender and unfortunately also a great many Superintendents, only too often do not fully appreciate the many advantages that can be gained by the proper selection of the right type of felt as well as the proper treatment of the same after it has been placed on the paper machines.

What function does a felt on the paper machine have to perform? The most apparent purpose for which it is there, is, of course, to guide the delicate very wet sheet of paper through the presses, to act as a sponge, so to speak, which absorbs the water which is removed from the paper by pressure. On higher grades of paper a felt should be sized up and judged by its performance regarding the following three points: openness, strength, and finish. It is very difficult to combine these three features successfully in a felt. It is relatively easy to accomplish two of them, but usually the third feature has to be sacrificed. Today, however, felts are on the market which satisfactorily cover every point of the above specifications.

Openness: A felt should be open, that is, it should allow the water which is pressed out at the presses, to drain off rapidly. This is a very important feature as the cost of removing one pound of water on the presses is infinitely smaller than removing this same one pound of water on the driers by evaporation. This being recognized by the paper maker, his natural aim is to purchase a felt which will be open, perhaps to an excess, a felt which will not blow and remove as much water as possible. Such a felt as a rule also combines with the first element, that is, openness, also the element of strength, but unfortunately it is exceedingly difficult to combine with these two factors with that of finish and as a result, papers produced with such felts will carry in and on the sheet a true imprint of the felt weave, commonly known as felt marks. On the other hand, if the paper maker purchase a felt entirely from a standpoint of finish, such a felt, undoubtedly, would be woven with fine soft threads, very closely together, but in doing so the strength of a felt would materially suffer and its porosity and openness would be practically nil, resulting in a very materially reduced speed of the paper. You can see, therefore, that the felt manufacturer does not always have a very easy proposition, because in satisfying the whims or desires of the Superintendent in one respect he is very often apt to produce other results which are not desirable. It also shows the necessity of giving the felt manufacturer all possible information as to the features which are most desired in the felt he is to make.

Now a little about treatment of felts on the paper machine and causes which are very apt to reduce their life. When the felt first is taken off the loom of the felt weaving plant, it very much resembles a coarse blanket something like burlap with very open meshes. As a rule this felt is woven just about twice the width ordered and considerably longer and it is then subjected to a shrinking or fulling process which gradually brings it to the desired width and length. I mention these points in order to illustrate what is apt to happen to a felt when washed with water which is too hot. If this is done while the felt is roped up, it is bound to shrink or if done while the felt is under tension this shrinkage will result in a very material weakening of the individual fibers. It is equally destructive of the life of the felt to use strong alakalies. Wool fiber, or in other words sheep hair, is saturated with a fatty substance. As a rule this fatty substance is removed during the early processes in a felt-manufacturing plant and another oil is later added to the wool.

Soda Ash should never be used in combination with water hotter than 120°.

Too much attention can not be paid to the condition of the felt carrying rolls over which the felt has to pass. Iron rolls which in the course of time get pitted, are entirely objectionable and rolls with a smooth surface only should be used. As few felt rolls as possible should come in contact with the outside of the felt, that is, the side of the felt which comes in contact with the paper. The above suggestion is made because the felt in its continuous travel produces a friction, even if it is only a small one, between its surface and the rolls over which it passes and this more than anything else is instrumental in gradually removing the nap of the felt. Not to be forgotten, of course, is the suction box of a felt which should be constructed in such a way as to be efficient and yet offer as little friction surface as possible. Felts as a rule are woven and prepared in such a way as to have a heavy coating of nap on both sides. The machine tender will use such a felt for perhaps a day, during which time some of the nap on the inside of the felt is scraped off. The felt is then turned over and the felt fibers are removed from the other side, which is now on the inside. This turning over process is repeated day after day, and in this way gradually the nap which forms the cushion of the felt, and which prevents the texture of the felt from being imprinted into the web of paper, is gradually worn off, making the felt absolutely worthless for better grades. We have recently experimented with felts which had nap only on the outside of the felt. This felt, of course, could not be turned and we, therefore, always have a good protective layer of nap on the side of the felt which comes in contact with the paper. This method has resulted in a very material increase in the life of our felts.

Another very important feature on each wet part of the paper machine is the worm or spread roll used in connection with felts. Worm rolls are always objectionable and should be, if possible, avoided. Whenever, however, it becomes necessary to use them, they should be selected and periodically inspected with the greatest possible care. Wooden worm rolls with strips of felt tacked on are perhaps used only on the smaller machines, and brass or copper rolls with a copper worm soldered on to their surface are in more general use to-day. The worm should not be raised too high above the surface of the roll and the edges must be carefully rounded off, as nothing will remove the nap from a felt faster than an improperly constructed worm roll. The pitch of the worm should be absolutely uniform. To cite an illustration: we had considerable trouble with a glazing felt which was also equipped with a metal worm roll. All felts seemed to give out and developed slack spots after a few days' life on a certain spot about two feet from the back side of the machine. Press rolls were calibrated and the whole machine was carefully gone over from one end to the other without bringing a remedy of our trouble. While again changing felts the writer happened to see the worm roll which was used in connection with this and found that the pitch of the worm roll was different just at the spot where the slack places in the felt usually developed slack spots after a few days' life, several months ago this felt roll had been sent to the repair shop to have the worm repaired. This repair was not made in the proper manner, so that the worm about two feet from the back side had less pitch than on the remainder of the surface. This, in a very few days, induced the felt to bag on this spot, with the result that it was chewed between the press rolls. The installation of a new worm roll immediately remedied this.

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* Reprinted from *Alfelco Facts.*

The average paper maker judges the performance of his felt very largely by its life; some express it in days' life and others in tons of paper produced. While this comparison in a great many instances is a fair one, other localities, particularly those where coal demands high prices, measure the performance of the felt amount of water removed.

A few words about the so-called seam in a parer maker's felt. The black or colored line in a felt, commonly known as a seam, is nothing more than a guide line, as most felts, except exceptionally long ones, or special sizes, are woven endless. One of the machine tenders favorite pastimes is to place leaders on his felt roll so as to keep this guide line straight. It is usually the felt which is misbehaving that necessitates the use of leaders. The thought that rolls may be out of caliber usually does not come to their mind. Many a felt is blamed for marking when its marking is largely due to its being pulled out of shape by an excessive use of leaders or improperly calibrated rolls.

Just a last word on another item which very materially influences the life and performance of a felt. I refer to the press rolls themselves. As a rule to-day, rubber bottom press rolls are used. Very often it is the tendency of the Superintendent to run these rolls at a greaater density than necessary so as to get away from too frequent grinding of his press rolls. It has been the writer's experience that rubber press rolls with a density of about 55 to 60 give very good service. They are not so soft as to cause too frequent trips of the roll to the grinder and yet they are easy on the felt. It may be of interest to note that on one of our machines where we had used fairly hard rubber rolls, we immediately increased the life of the felt 50 per cent by going from about 40 density to a 55 density on the bottom rubber press roll.

* * *

Where is there a brighter, warmer spot than in the sunshine we create for others? It is the secret of happiness.

MR. HENNESSY RESIGNS AS WOODS MANAGER

A. W. Hennessy, who for the past six years has been manager of the woods department of the Abitibi Power & Paper Co., Iroquois Falls, Ont., has resigned and will carry out a good deal of work on his own account in the way of logging contracts with a number of mills. He is a man of wide experience and sound judgment and was contracting on the Abitibi limit in 1917 when his brother, O. M. Hennessy, manager of the woods department, lost his life at Island Rapids, above Twin Falls. A. D. Hennessy succeeded him. Previous to his work for the Abitibi Company, he was with the J. R. Booth interests for some time.

H. G. Schanche, who has been manager of the forestry department for a considerable period, succeeds Mr. Hennessy and will carry on the work of both departments. In future all woods operations for the Abitibi organization will be in charge of Mr. Schanche, who supervised the logging work on the railroad territory during the past winter. Mr. Schanche has appointed Hugh D. Hennessy superintendent of logging, and G. W. Turk, office manager.

GETTING MOST HEAT FROM SUBSTITUTE FUELS

Many a householder who has experienced great difficulty in trying to burn the substitute fuels thrust upon him this winter will welcome a pamphlet just issued by authority of the Dominion Fuel Board telling him just how to proceed to get the best results. The Mines Branch at Ottawa has been experimenting for months with these auxiliary fuels in ordinary domestic furnaces, and the pamphlet now issued tells what they have found out. The fuels tried out were soft coal, pea-size anthracite, gas coke, 72-hour nut coke, Welsh anthracite and peat.

A feature of the experiments was that the use of two of these fuels together often gave better results than one used alone. Complete directions are given for building the fire, for replenishing it and for regulating the drafts. Chemical analyses are also published of each fuels, showing its comparative heating value, ash content and other constitutents.

Particular interest attaches to the directions for using soft or bituminous coal; for, the Canadian householder, in the great majority of cases may find it necessary to use soft coal for the remainder of this winter. This fuel the pamphlet points out, is differentiated from anthracite inn having a much higher percentage of volatile or gaseous material. Its heating value, however, is nearly 10 per cent greater than that of anthracite, but is must be fired differently from the latter to get best results.

Care must be taken to see that the gases that come off are burned. In putting on more fuel, part of the old fire must be left uncovered to ignite these gases and the grid in the fire door must left open to supply air that the gases will be burned. A soft coal fire also has to be poked more to break up the cake coal fuel mass in order to permit of complete combustion. The unconsumed gases deposit a laver of soot on the interior of the furnaces and the flues, and this should be cleaned off daily to get the best heating results.

The pamphlet is written in clear non-technical language, and should be read carefully be every householder. It is being widely circulated and coal-dealers are being given a supply for free distribution to their customers. Copies can also be obtained on application to the Department of Mines, Ottawa.

Proceedings of the Technical Section

DISCUSSION OF PAPERS

(Continued from last issue)

FUNCTION OF PRESS FELTS

MR. BRYANT: The Technical Section has been particularly fortunate this year in having on its program a paper entitled 'Functions of Press Felts," by Dr. Rees of the Kenwood Mills at Albany, New York, and Arnprior, Ontario. Those of you who have had an opportunity of reading the re-print of this paper must realise that Dr. Rees has gone into the matter in a very thorough manner and is working along very interesting and productive lines. The method that he has followed will appeal particularly to the technical men of the Section. I have great pleasure in introducing Dr. Rees of F. C. Huyck & Sons.

DR. E. A. REES: Mr. Chairman and members of the Technical Section, in our experience as felt makers at Arnprior and Albany, a number of very interesting things have come to our attention in regard to the functions and purposes of felt. We have come to realise the need of a lot of study and research into the properties and functions of felts. Whereas a felt has generally been regarded as a sort of belt running along and absorbing water from the sheets in a sort of mysterious manner, we have now come to believe that the felt performs some very definite function, and we are endeavouring to study them. To make a felt so that it will run with the necessary strength, resistance to stretch, hold its width properly and at the same time take out the water involves many problems. We know that the type of wool, the size of the yarn, the relative hardness and softness of the yarn all affect the property of the felt in an appreciable degree. These things can be balanced in any desired proportion. You paper makers know more about the action and purpose of felts than I do. My paper is merely an attempt to present some of the properties of felt in a samewhat definite and graphic manner.

(The paper of Dr. Rees "Functions of Press Felt" was printed in the "Pulp and Paper Magazine" for Feb. 1, 1923.)

Discussion of Paper

MR. BRYANT: I am sure the Section is deeply grateful to Dr. Rees for his most interesting paper and I think I express the feeling of the meeting when I say that it has been a privilege to hear it. I hope all the members will feel free to ask Dr. Rees any questions. We ought to have a free discussion on this subject of the functions of press felt.

MR. SHIPMAN: In Graph 7 different felts were applied as A, B, C, and so forth. Might I ask, is the data available showing how felt A differs from felt B or Felt B from felt C with regard to porosity?

DR. REES: I cannot tell you off hand, Mr. Shipman, but the porosity has varied in some cases. The felts with the higher porosity in general gave a drier sheet than the felt with the lower porosity; however if the latter were a harder porosity, so that porosity does not bear a direct relation to felt, the pressure obtained might overbalance the factor of the question of the moisture in the sheet.

MR. SHIPMAN: Dr. Rees did not quite catch the gist of my question. Is the information available as to what is the difference between felt A and felt B in the manufacture of the felts? For instance, if we had two pieces of felt on the table before us, how could we word the specifications for A and for B? Could we obtain information as above for these different felts if we tried to do so?

DR. REES: Yes.

MR. SHIPMAN: I am speaking of the possibility of different wools used in A and B and different methods of weaving.

DR. REES: The size and hardness of the yarn.

MR. SHIPMAN: Would that be available if we asked for it?

DR. REES: Certainly.

MR. MASON: Might I ask Dr. Rees if these unit pressures, shown on the Graphs, are as high as he ran? Did these unit pressures show the greatest pressure within the range of the experiment? They look to be much below the normal practice in news mills.

DR. REES: I think that is true; they are lower than the pressures in most news mills. I merely covered a small range because you will understand that my little machines would not sustain a higher pressure.

MR. MASON: These tests were all made on blotting paper?

DR. REES: Our experiments were all made with blotting paper and with an 18 inch width of felt.

MR. BRYANT: Dr. Rees, may I ask whether, as shown on the Graphs, 900 pounds pressure means 900 pounds throughout the entire length of the roll or 900 pounds per inch of the width of the roll?

DR. REES: They show at about 900 pound pressure over the entire width, or 18 inches, of the felt.

MR. HAZEN: Dr. Rees' paper has been so interesting and suggestive that it invites all kinds of questions. I should like to ask him one: Did he vary the size of the roll in any of these tests and has he tried a small roll with the load applied against it?

DR. REES: I do not know that I understand your question. We did try tests with rolls 20 inches in diameter while the rest were 5 inches in diameter.

MR. HAZEN: Did you on the 5 inch roll increase the load heavily so as to compare with the load on the 20 inch roll?

DR. REES: You are referring to the Graph showing the results with the 20 inch roll and the 5 inch roll?

MR. HAZEN: Yes, Graph No. 6.

DR. REES: Graph No. 6 shows the total pressure the same in each case but the condensation varied a little.

MR. CAMERON: I would like to ask Dr. Rees if he has any idea of the pressure in pounds per square inch on the roll.

Dr. REES: I cannot tell you that offhand but you can perhaps figure it out. We had an 18 inch width of felt, the nip contact on that width varied from one-half to one and one-half inches, and therefore the area of contact would vary from one-half to one-and-a-half inches multiplied by 18. The maximum pressure on that area was 1075 pounds. It should also be borne in mind, however, that this pressure is not uniformly distributed over this area. I have merely attempted in this paper to portray some of the things that affect moisture removal. There is still a lot of work we have to do in order to answer these questions in a quantitative manner.

MR. CAMERON: What is the total pressure on the roll in a news mill?

MR. MASON: It varies in different mills but I would say, from a rapid calculation, that we oftentimes use two or three times, or at least twice, as much pressure at the nip as shown on these charts.

MR. BRYANT: We measure our pressure generally in pressure per inch of the width or the roll rather than pressure per square inch. It is very difficult to determine the area of the nip.

MR. CROSSLEY: Were the rolls used perfectly straight or were they rolls with a crown?

DR. REES: We have made no experiments with crown as yet. This was not a factor with the width of rolls used here.

MR. MASON: I am afraid that none of us knows very much about this subect but we certainly appreciate very much the work that Dr. Rees has started and I want to move a vote of thanks to him for his fine paper and in doing so I would express the hope that as the days roll by we will all learn a little more about it.

PROF. KEAY: It was my good fortune to witness some of the tests of Dr. Rees in his own laboratory and I think he has opened up an avenue of thought in the matter of water removal which few of us have anticipated. The term, back filtration from the nip, is quite at variance with our conception of water removal by felts. We have thought it a matter of absorption, but apparently it is not that. The task of Dr. Rees will be that of discovering a felt which offers the least resistance to back filtration. Perhaps some of our friends working on the problem of suction rolls could help him out a little. This is a subject of very great interest and I think it is only proper to move a vote of thanks to Dr. Rees for his very interesting paper. I have therefore much pleasure in seconding the motion that Mr. Mason has made.

Motion agreed to.

THE MANUFACTURE OF INK AND THE RELATION OF INK PROPERTIES TO THE PRINTING OF PAPER OF ALL GRADES

MR. BRYANT: The next paper on the Program is entitled "The Manufacture of Ink and the Relation of Ink Properties to the Printing of Paper of all Grades." It will be presented by Mr B. G Ransom

(The paper of Mr. Ransom on Manufacture of Ink was printed in the "Pulp and Paper Magazine" for Feb. 1, 1923.)

MR. BRYANT: We are deeply grateful to Mr. Ransom for the valuable paper which he has given us. He has shown us that the printing ink manufacturers also have their troubles and I do not know but that he has given us a few hooks upon which we can hang some of the complaints that we receive from the printers.

MR. W. B. CAMPBELL: There is one question that I think worth mentioning. The paper makes mention of carbon black as being used quite extensively. The utilization of printed papers for paper stock is now very largely developed. The only way that stock can be regenerated is by washing out the black particles which is a long and expensive process. If ink for cheap purposes, such as a dye instead of carbon and which could be bleached out could be developed it would be a tremendous saving in the paper business.

MR. RANSOM: Anything of that nature is only used as a substitute in the manufacture of certain kinds of inks that are made by the inkmakers but nevertheless carbon black is the cheapest and most satisfactory of any black pigment that can be used. Our company hunted all over the world for something to take the place of carbon black but they could not find it; they had to stick to carbon black. It is permanent too.

MR. W. B. CAMPBELL: There are several interesting points mentioned in this paper. At page 20 Mr. Ransom says:

> "Too often the ink maker is kept in ignorance of the kind of paper on which his ink is to be used. He tries to meet an average condition and frequently has his ink returned because it has not dried properly, when the fault lies in the paper."

It seems that the fault lies with the printer in not letting you know what kind of paper he is going to use.

MR. RANSOM: It may be damp paper; it may be paper with too much moisture in it whether it is the manufacturer's fault or not.

MR. W. B. CAMPBELL: That, of course, is possible but the quality of the paper has probably more to do with it than the moisture of the paper. The moisture of the paper that goes to the press room is pretty uniform. Then, at page 23, Mr. Ransom says:

> "Another difficulty which is not infrequently encountered is the presence of free acid due to the bleaching materials not being properly neutralized at the end of the bleaching process."

That is practically impossible because any acid produced in the bleaching has gone long before the paper ever gets to the printing machine. There may be a slight reaction of the acid but the reaction is so slight that it should not affect the ink.

MR. RANSOM: The presence of any sulphur will raise trouble with these copper plates. Not speaking of the paper at all, the presence of sulphur will affect the gravure process, but perhaps acid, if there is any in the paper, is just as bad. I am not up very much in paper manufacture and personally I have never had any trouble with paper, but that has been the experience of our men.

MR. W. B. CAMPBELL: I agree that sometimes the paper is at fault. I was looking into a case involving the printing of gravure paper a little while ago. Of the two printing cylinders on the machine only one was showing this difficulty. If there is any chemical in the paper surely it would show just as much on one side of the machine as on the other. That same paper also showed a peculiarity in that it tended to curl more on one side than on the other. The paper held about ten per cent of clay. I do not think there is any doubt but that the trouble is in the plant of the printer himself and that there is no chemistry about it at all. At the same time, there is always the possibility that dust may settle in these ink vats that stand around the printing house. Is it not possible that within the plants ordinary dust gets into the vats?

MR. RANSOM: Rotogravure ink that stands open for any length of time is not fit to use, because that ink loses all its life and printing qualities. You should only use a little bit of ink at a time and you should constantly add fresh ink to the supply in the fountain of the press.

MR. W. B. CAMPBELL: The particular book to which I have reference was taking about two weeks to run. It was not a question of how long the cylinders would last before needing replacement in order to make a further impression; or that the cylinders were worn out, but the trouble was that the cylinders were becoming scratched. They would keep on accumulating and picking up the ink. It seems that it takes a very small amount of dust to make a lot of trouble. In this particular case I was pretty sure that it was not the clay that was making the trouble.

There are one or two other comments that I desire to make, and I would first say a word about the plucking of coated paper. We make coated paper; we are always up against complaints and we think a lot of them are due to the printers not using ink to match the paper. In one instance the same paper was supplied to two branches of the same printing house — exactly the same paper for exactly the same work, one branch complained that the paper was too hard and that the ink did not go in; the other complained that the paper was too soft and that it plucked. Certainly, they could not both have been right or the paper could not have been handled in the same way.

MR. RANSOM: In our business we find exactly the same thing. We find that we can sell ink to two men, that one, on one side of the street says it is the best ink we ever had while the other, on the other side of the street says it is no good.

MR. W. B. CAMPBELL: I would like to ask two questions. One is why they do not use blacks in the rotogravure process, and the other is what is the best solvent of exposed oils in these inks. The latter question comes up on account of reclaiming old papers. About fifty per cent of our raw material is old paper stock that we wash and make over. Every once in awhile a few black specks come along that we do not seem to get out and we are never quite sure whether these are ink, or coaldust, or soot, or what they really are. I was wondering if Mr. Ransom could tell me of any method by which we could determine that.

MR. RANSOM: I think that what you want is a bleach more than a solvent.

MR. W. B. CAMPBELL: Bleaching does not affect oil.

MR. RANSOM: For a solvent the very best of gasoline is used or a combination of benzol and carbon tetra-chlorid.

MR. W. B. CAMPBELL: They do not seem to do it if they have been coated a little. Many use litho label varnish.

MR. RANSOM: If you use litho label varnish you will have to use wood alcohol.

MR. W. B. CAMPBELL: Soda ash seems never to get this label varnish.

MR. RANSOM: It is just resin and alcohol.

MR. W. B. CAMPBELL: What effect has the sizing of the paper on the use of the ink in roto-gravure or ordinary book print? You mentioned calendering.

MR. RANSOM: In rotogravure if you do not get the finish on the stock your ink penetrates and you do not get the benefit of the ink; it sinks in.

MR. W. B. CAMPBELL: What about sizing?

MR. RANSOM: Sizing should not matter if it is put there to make the paper smooth.

MR. W. B. CAMPBELL: It makes it water resistant.

MR. RANSOM: There is no water used in roto-gravure printing.

MR. W. B. CAMPBELL: I was wondering what effect sizing would have on the ink.

MR. RANSOM: I do not think it will have any. Our troubles do not come very much from the paper; it is a question of quality. You can take a newsprint paper or any kind of paper and get very beautiful results with rotogravure but of course the better the paper used the better the result you get. Does that answer your question?

MR. W. B. CAMPBELL: No. Sizing will affect the penetration of water but it does not affect the penetration of ink using paper of the same surface and quality.

MR. RANSOM: Of course, if it is sized, it will hold the ink on the surface, but, as far as drying is concerned, it will dry by evaporation. We have more volatile matter in the ink.

MR. W. B. CAMPBELL: How about book paper printed by the ordinary process?

MR. RANSOM: It depends on the absorption.

MR. W. B. CAMPBELL: Do you know whether sizing will affect that?

MR. RANSOM: Yes. As a general rule, if a printer buys ink for a particular job and he can take it up again and use it for another job, it is an accident, because every lot of ink should be conditioned for the particular job in hand. But that is a thing that you cannot lay down any rule for. The whole thing is the job in hand; size it up and try to meet the conditions. It is very seldom that we blame the paper for our trouble. The great kick we have had is in regard to newsprint. I have had publishers call me down and take me into the press room to show me what they claimed to be grit in our ink. I have taken the ink off the press, put it under the microscope and shown them that it never came out of our factory, because in some cases the grit was crystaline in structure. Carbon blacks are made by sooty deposit of natural gas on steel plates. Continuous use keeps these plates polished and clean, but if shut down for two or three months and the presence of moisture causes rust you may have trouble. But it is up to the ink maker to watch that and get after it before it reaches that stage. We have recently installed in our various plants a separator and we get everything out of the ink of a gritty nature when it goes through that separator. All our ink to-day goes through that separator. Therefore, we feel that we are pretty safe in saying that the trouble does not come from our ink; it comes there itself in the press room or from the paper. That is about the only trouble we have.

MR. W. B. CAMPBELL: I fancy that in that case the printer makes a claim both on the ink manufacturers and the paper manufacturers.

MR. RANSOM: Well that is our fault then. · Our chief trouble in regard to coated paper is plucking; you cannot get the quality of Printing. But we can make the ink so that it will work but you will not have the same quality of work.

MR. W. B. CAMPBELL: Is there much difference between the inks used in this country and in England for coated paper?

MR. RANSOM: I think that in England they have in their printing press rooms men who are educated in the handling of ink and they look after the ink. The press man there is an expert in the manipulating and handling of ink. There they get ink with a better body but not so ready to use and not so much reduced. Then the man who has a job in hand can let that ink down as low as necessary for that particular job.

MR. W. B. CAMPBELL: The coated paper used in England has nearly always a very much softer coating than that which is demanded here. If we turned out paper with as soft a coating as the samples of English paper we have seen we would get it all back.

MR. RANSOM: Is it your experience that English paper gives better results out here than your own?

MR. W. B. CAMPBELL: Printers do not like to use it.

MR. RANSOM: Well, there is your answer, then.

MR. W. B. CAMPBELL: They use it all right in England but they do not seem to use it here.

MR. RANSOM: During the war the paper was bad, but under ordinary circumstances I think the coated paper people here make very good paper. Of course, a lot depends on the equipment of the printer.

MR. J. N. STEPHENSON: Occasionally early in the morning the press room is below the proper temperature and to get started the pressman is likely to thin his ink; that is indicated in a recently published paper that I saw. That accounts for the rather faint impression that we see in some of our magazine work. Is it possible to get the ink handled properly at a temperature of 60 degrees in the press rooms and to obtain the proper depth of color? It may be possible to do that by a heavier distribution of the ink on the table. I do not know whether you could get enough ink on the type to give you the depth you want. It may be possible to use a different ink for a low temperature from what which you would use for a temperature of 70 degrees.

MR. RANSOM: Ink is made to meet the average condition. The average condition is that you are supposed to have your press room at 70 or 80 degrees. The remedy is to raise the temperature in the press room. If you cannot do that the only thing is to reduce the ink and when you do that you reduce the color strength with corresponding results on the printed sheets. You might have an electric heater or something of that kind to warm up the press, but you will save more money in the long run by having the proper heating equipment in the press room which will also have the effect of more rapidly drying the ink. If you are not warm enough you will have to wait longer for the drying and it will cost you more.

MR. A. S. CHRISTIE: In view of the number of articles which I have read recently as to the use of kraft in printing, is there an ink that can be used for a 100 or 133 screen plate to get satisfactory results on a kraft surface?

MR. RANSOM: Kraft can be printed, of course, and the ink can be made but I would think that with a rough stock of that nature the best method of printing is the offset process because there you will use rubber which will get down into the surface of the kraft. If you have roughned paper and want to print it there is another way to do it and that is to take that paper and press it out smooth or print it from a rubber roll which will conform to the surface and get down into it.

MR. J. N. STEPHENSON: Suppose you handle super-calendered kraft?

MR RANSOM: That is a paper I must admit frankly I am not familiar with. If it has a smooth surface you should have no trouble in getting it printed. If you will send me samples of it I will endeavour to have it printed and see what we can do in the way of making an ink for it. If you have any new papers our company will be only too pleased to make trial runs for you and produce an ink to meet your requirements. It is pretty hard in the printing business to say right off the bat how you can do a particular thing, but we are up against that all the time, we have men who specialize in it and there is no proposition we will not tackle even if we fail altogether.

STOCK SAVING — WITH AND WITHOUT SAVE-ALLS

MR. BRYANT: We have just received a paper from Mr. E J. Trimbey, of the Trimbey Machine Works, Glens Falls, New York, on stock saving with and without save-alls. He was to have read this paper but he is ill and is unable to be present. I am going to ask Mr. Beck if he will kindly read the paper for Mr. Trimbey.

MR. BECK: Mr. Trimbey's paper is as follows:

(The paper by Mr. Trimbey on Stock Saving With and Without Save-Alls was printed in the "Pulp and Paper Magazine" for Feb. 1, 1923.)

MR. BRYANT: We had expected Mr. Campbell and Mr. Morrison to lead the discussion on this paper. As Mr. Campbell is not present I will ask Mr. Morrison to say a few words.

MR. MORRISON: I am sorry that Mr. Campbell is not here because he no doubt knows the subject better than I do. Mr. Trimbey's paper brought to my mind a number of things that I have learned and seen in the paper mills that I have visited. I think I cannot too greatly emphasize the fact that a great many mills probably do not know what they are losing from this source. Some of them really do know but not many, because they arrive at conclusions by deductions, estimating a certain yield and figuring how much should be accounted for. It is always possible to correct a loss of water; that is to know exactly what it is, where it occurs, and how much it is. But the pulp in white water is another matter and it is something that has been discussed by everybody in the industry. Recently I had a letter from a man connected with one of the largest mills stating that they were interested in save-all work, but upon investigation at each of the points where white water was being sent out they had come to the conclusion that it was impossible to return all the water in the system but that in decreasing the water taken out of the paper machine on the dryers they considered that they returned all the white water to the mill system. In other words, they would lift themselves by their boot straps. The discussions that I have had with some of the pulp mill engineers leads me to believe that such a system would be impossible. This point is urged as if it were something novel or new. I would like to leave that suggestion before this meeting and I would like to hear a discussion of the subject of the feasibility of returning all the white water to the mill system by using the white water for the sulphite pulp washing and returning it to the grinders and all other possible points. Is it a feasible thing to make a mill self-contained in so far as water is concerned?

In that connection I have been told that the water would not merely come back into the system but that dirt, grease, and various impurities would fill it up and make it necessary eventually to clean out the whole mill system and start over again if the closed system were followed. I admit that I am a novice in the pulp game and that there is a great deal to learn about it; and I would like to hear a discussion upon the point raised. I do not think it is new. I have been told that it has been tried with success in certain mills in the past.

I agree with Mr. Trimbey's paper that all save-alls should be considered as necessary. My understanding is that the proper point for the elimination of waste is at its inception. Small wastes accumulate into a very large total in some of the mills. In the majority of mills I have seen I think that the loss could not be considered excessive, taking into consideration the magnitude of operations, the large amount of raw materials going into the pulp mill and the amount of water that has to be used in manufacturing pulp. In the United States, and also in Canada, the mill is very often in a position where eventually it will have to get the lost pulp out of the stream

I remember having a discussion with a man familiar with high speed operation. They are running about a thousand feet per minute and the losses in white water are probably about the average of a new mill. If the mill is well managed and well taken care of the losses are presumed to be about three per cent of the production. This man made the statement that if the short fibre that is going to waste could be embodied in the sheets with increased felting action by the slowing down of the stock at the machine, it would supply a better filled, stronger sheet which could be operated at greater speed. In addition to the advantage of returning this three per cent of production and eventually putting it into the sheets, the further advantage would result of getting higher production for a given length of time because he would have the sheet running at a higher speed. That statement was made by a man who is familiar with high speed operation. I would like to hear it discussed by some person who is more familiar with that subject than I am.

MR. F. J. CAMPBELL: Mr. Trimbey did some very interesting work for us some years ago. He put in a measuring system for measuring waste water and showed that by cutting down the showers on the machine there was a saving Has anybody had any experience in using white water as shower water?

MR. HYATT: I know of instances where excess suction water is used as shower water on the ordinary Fourdrinier wires.

MR. BRYANT: If there is no further discussion on this very interesting subject, this will conclude the presentation of papers for this afternoon.

THE LATEST FROM SWEDEN

Cablegrams from Stockholm to the American Paper and Pulp Association indicate that no immediate settlement of the strike in the pulp mills of Sweden is to be anticipated.

Following is the latest message from Stockholm to the Association's offices in New York;

"The failure of the arbitration in the saw-mill conflict tends to postpone a pulp settlement. The government arbitrator continues his efforts, but his powers are limited to suggestions, which have not thus far been well received by either side.

"It looks as though the 17,000 men employed in the pulp mills would not go back to work in the near future. It is very difficult to prophesy, however, as conditions might change at any time."

An effort will be made to secure a report on the latest developments in Sweden to present to the annual convention of the American Paper and Pulp Association in New York, April 12.

FOREST PRODUCTS COMPRISE MOST OF EXPORT INCREASE

Ottawa, March, 30. — Newsprint, woodpulp and lumber are the chief products that contributed to the increase in Canada's exports to the United States for the eleven months of the present fiscal year, as compared with the corresponding period for the last fiscal year. The group of wood products and paper, to which these articles belong, account for more than half of the total increase of $63,000,000 in our total exports to the American Republic. The remainder of the increase was pretty well scattered through the entire list, except that there was a falling off in the exports of agricultural and vegetable products.

Messrs. J. Jacobson, a pulp and paper mill engineer, and T. G. Howland, representing Howland and Waltz Company, of Minneapolis arrived in Nelson, B.C., on March 18th, for the purpose of investigating the facilities for the establishment of a pulp and paper mill at that place.

Institute Items

WHERE VOLUME IV STANDS

The receipt of a letter from the superintendent of one of the most important Canadian paper mills regarding the character of the manuscript on "Paper Making Machines" suggests that readers of the Magazine, and students in the Institute will be interested in learning just how the matter of publication of the fourth volume stands at the present time. This superintendend has been reading carefully and criticising the manuscript, and refers to it as follows:

"The manuscript is very thorough and it certainly must have required an enormous amount of patience to go into details to the extent the author has done. It covers, as you know, very largely operating practise and methods."

It is the careful criticism of all the manuscript used in these textbooks in just this way, by practical operating men, that is making these books so exceedingly valuable as text and reference books.

At the present time, where there is in the hands of the publishers, the following manuscript; section 1, the Preparation of Rags and Other Fibers; section 2, the Treatment of Waste Papers; section 3, Beating and Refining; section 4, Loading and Engine Sizing; section 5, Coloring of Paper.

Section 6, which has to do with the description of Paper-Making Machines and Their Operation, is the largest section in Volume IV, and perhaps the most important in the whole text; certainly it has been the most difficult to prepare. This section is divided into six parts, five of which are ready for the printers, as soon as they are finally approved by the author, who is now reading his contribution after it has been reviewed, criticised and corrected by no less than a dozen expert paper makers.

Part one of this section deals with regulating boxes, sand traps, screens, chests and pumps and the Fourdrinier part of the machine. Part two describes the press part; part three describes the dryer section; part four describes the calenders and winders; part five describes cylinder and special paper making machines, and part six describes the various types of paper machine drives. The description of the mechanical type of drive is complete, and the description of the latest improvements in the sectional electric drive are now in preparation. This section, alone, will require more than 100 illustrations. There will also be a brief appendix explaining the calculation of paper machine production, the use of humidity charts, etc.

There is no question at all but what this fourth volume of the series will be unapproached by anything that has yet been published on the subject.

HE FINDS THE TEXTS VERY CLEAR

A student who enrolled in the Paper Making Course on the first of November 1922 is now at work on his last preliminary paper. In sending in his answers to questions on the first part of the Chemistry section, he writes as follows: "I have found these books on Chemistry exceptionally clear and concise, more so than the textbooks usually in use at College."

The care, that has been taken in preparing these texts especially for persons connected with the pulp and paper industry is appreciated by our students, who find them much easier to understand than a general text.

Wood Pulp Shortage And Price Advance Expected*

Swedish Strike and Lock-Out Cripples Industry

(Written especially for "The Swedish-American Trade Journal")

Pulp importers and paper manufacturers in this country are with grave concern following the developments of the prolonged labor conflict in the Swedish wood pulp and iron industries, and the hitherto futile efforts to bring about settlements through arbitration. The effects are already making themselves felt in America in a tendency towards higher prices and considerable speculation as to just how far the prices will go.

The trouble started when the Swedish wood pulp mills on January 1st, this year, put into effect a new wage scale involving a reduction of about 11%. The old agreement with the laborers expired on December 31st, and negotiations to bring about a new agreement failed, as the workers demanded a wage increase of from 15 to 30%, while the employers were resolved to reduce wages by 11.3%.

The first strike occurred on January 3, when 600 men laid down work at the Skutskär Sulphate and Sulphite Mills, followed on January 4 by a walk-out of 500 men at the Karskär wood pulp mills. On January 17 thirty mills were involved in the strike.

Lock-Out Affects Pulp, Iron, Lumber and Building Industries

On January 16 the Employers' Union (Svenska Arbetsgivareföreningen) authorized the proclamation of lockouts at pulp mills, iron works, saw mills, and the building materials industry. The lockout at the pulp mills and iron works went into effect on January 29, involving, according to the Employers' Association, 70 pulp mills and 72 iron works. However, of the 17,000 pulp mill workers 13,000 were then already on strike, and of the 24,000 iron workers, 4,000 had struck. The lockout at the saw mills affected 25,000 men, and in the building materials industry, 4,000. This would make a total of 70,000 workers affected by strikes and lockouts, but the Swedish Socialist paper, "Social Demokraten", on February 3 put the figure at 82,000.

It is to be noted that only pulp mills belonging to the Wood Pulp Makers' Association (Pappersmasseförbundet) are affected by the conflict, but as this association comprises a membership of about 90% of the total, the fact that the work at the few mills outside the association continues is of but small significance.

At first glance it appears that the controversy is based entirely on dissension regarding wages, and while this undoubtedly is the present actual issue, the fundamental cause is to be found in the recent efforts of the labor unions to force the wood owners in Sweden to adopt a collective wage and labor agreement, uniform for the whole country, involving fixed stipulations not only as regards wages but also as regards who would be entitled to work.

Differences Between Employers and Workers

The question is whether this system can be applied to all parts of Sweden. Actual experience has proven that it can be done in Central Sweden, and the leaders of the labor organizations have apparently drawn the conclusion that a system that is suitable for one part of the country is equally suitable for other parts.

This is the main stumbling block. The wood owners in Northern Sweden (Norrland) maintain that it can not be done. Due to different natural conditions the whole system of sorting out, cutting and hauling the logs to the transportation ways is vastly different in Norrland as compared with Central Sweden, and this is a situation which the labor organizations have not taken into consideration.

A further reason for the difficulty in effecting an agreement is the fact that the present conflict is not confined to two parties, but is decidedly a three-cornered affair — namely, between the employers, the organized workers and the free-lance lumber contractors, with which latter the wood owners this year, as has always been the custom during previous years, have made contracts for the cutting and hauling of the logs. These contractors are not disposed to forego their earnings by breaking the contracts.

The wood pulp industry in Sweden is now practically at a standstill, and so well informed a publication as "Affärsvärlden" contends that this situation may cause "quite unfortunate consequences both for the mill laborers and for the employers if the mills cannot get their supply of pulp wood."

"The laborers' union," continues "Affärsvärlden," "has suddenly combined the settlement of the conflict at the pulp and the saw mills with the settlement of the dispute with the lumbermen, which has greatly complicated the matter. To run the risk of seeing the pulp and saw mills stopped in the course of the year owing to shortage of timber and thus increase the unemployment during the present time of hard depression for these industries is certainly no wise policy on the part of the laborers' union."

Price Advance Expected

What effect will this situation have on the pulp prices?

Without a single dissenting voice the opinion is that prices will go up. In fact, Swedish quotations have already advanced — although not as much as might have been expected. While Swedish unbleached sulphite stood at $2.80-$2.85 per 100 pounds ex-dock during November and December, quotations at the end of February are between $3.10 and $3.30, an advance of $6.00 to $9.00 per short ton.

But though the increase may be considered comparatively small, the real state of the situation may be found in the reports from pulp importers in New York that some Swedish mills are already refusing to make any quotations whatsoever. According to reliable information Swedish mills have recently flatly turned down American offers of from $3.10 to $3.20, involving several thousand tons of pulp at a time. Even sales stipulating shipment from Sweden during the very first part of the coming season, May-June, have lately, evidently on account of the prolonged labor troubles, been changed so as to provide for later shipments, generally July-September.

The present price advance is considered only a forerunner by many pulp men. They base their opinion on the fact, firstly, that the stocks at the beginning of the year were unusually low; secondly, that Sweden has sold, previously and this year, several hundred thousand tons of chemical pulp for shipment during the 1923 season; thirdly, that a very large tonnage is taken away from the market every day the lockout lasts. The output of the mills affected by the strike and lock-out is estimated at about 15,000 long tons of sulphite, about 4,800 tons of sulphate, and about 5,000 tons of mechanical wood pulp per week. Not counting the January strike period, approximately 100,000 tons have been lost during the month since the lockout went into effect.

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Shortage of Wood Pulp Predicted

In an interview given to "The Paper Mill," Mr. M. Gintzler, of the Pulp and Paper Trading Co., New York, sizes up the situation, in part, as follows:

"The year of 1921 was a very bad one so far as selling pulp in this market was concerned. As a result of that slump in 1921, the pulp mills in Sweden at the beginning of 1922 found themselves with stocks of 200,000 tons of pulp on their hands. This surplus, added to their total production of the year of 1922, means that last year they sold to the United States and other countries and consumed themselves, a grand total of approximately one million tons of pulp.* Of this amount 400,000 tons were shipped to the United States, the balance of 600,000 tons being consumed in their own country and the other paper making countries of Europe.

"I do not hesitate to state that there was not more than 10,000 tons of surplus pulp in the whole of Sweden at the beginning of this new year."

On the question of what effect the lockout would have on the pulp prices, Mr. Gintzler stated unhesitatingly as his opinion that they would go up. "Prices are going up already," he said. "I have sold several hundred tons of pulp this week at $62 a ton for which I was refused $57 a ton last week, and this pulp is not coming from Sweden. It is coming from Czecho-Slovakia.

Mr. Gintzler stated that he anticipated only a slim supply of pulp from Sweden during the spring and summer, pointing out that "Sweden sold only 40% of her total production to America last year, and with her stocks in such a depleted state as they will be during the spring and summer months I look for a decided shortage of Swedish pulp in this market."

America Will Feel the Effect

In an interview which we have had recently with Folke Sundblad, President of the Wood Pulp Trading Co., Ltd., New York, who, in a special interview in the October issue of the "Swedish-American Trade Journal," predicted an upward price movement and a shortage of wood pulp, Mr. Sundblad emphasized the gravity of the present situation.

"When I mentioned to you in September," said Mr. Sundblad, "that the labor question in Sweden was extremely unsatisfactory, I saw this trouble coming. It is a thing that nobody wants to see happen, and I know that every effort was made last year to prevent this strike and the subsequent lock-out. The differences between the mill owners and the workers were, however, so great that it looked almost impossible to me already during my visit in Sweden last summer that an amicable agreement would be reached.

"But even had there been no strike, a shortage of wood pulp was bound to take place, at least to some extent. As the situation now is, a severe shortage will be felt during spring and summer, not only because of the Swedish shut-downs, but also on account of the general business improvement in the United States, and in England particularly, the strengthening pound sterling exchange, etc.

"Although the wood pulp buyers in the European markets apparently are quite well aware of the threatening outlook and are in an increasing degree taking measures to safeguard their supply of raw material for the balance of this year, indications are that the American papermakers have not yet begun to realize to what extent the supply of unbleached chemical wood pulp tends to fall behind the demand.

"It is true that the imports to this country of pulp, particularly from Sweden, were unusually heavy during the latter part of 1922, and that the papermakers still have quite a supply thereof on hand, making those who were farsighted enough feel rather independent and adverse to buying more pulp now for future deliveries at today's higher market prices. But they should not forget that the holding-off policy, while sometimes advantageous, in many cases costs a great deal of cold cash.

"Many people thought that the Swedish labor troubles were nothing but a "put-up job" to stiffen the market, but I, for one, am of the firm opinion that those unfortunate circumstances were brought about by the multitude of cross-currents now surging over Europe.

"Many also seemed to think that this shut-down of the Swedish pulp mills was nothing but a smoke screen, so to speak, to enable the plup mills situated at the Baltic to get rid of "heavy" stocks of pulp remaining from the 1922 shipping season. But whoever bases his activities on such a contention is bound to be greatly disappointed, because in all my experience never were the stocks of unsold pulp at the Baltic mills at the end of a shipping season smaller than this year.

"Summing up the situation, I cannot see but that there will be great difficulty in finding pulp for everybody in the second quarter of this year, and most likely also for later requirements. I base this opinion on: (1) the shut-down of the Swedish mills, which may take some two or three hundred thousand tons of sulphite and kraft pulp out of the market; (2) the enormous present consumption by the paper trade; (3) the fact that considerable quantities of pulp have already been sold to be delivered between May and December; (4) the very small stocks of unsold pulp on the docks in this country, and the stocks at the European mills smaller than ever."

It is at this writing impossible to predict how long the present shut-down of the Swedish mills will last, but in authoritative circles it is expected that a settlement can not be reached for another few weeks.

O. G. M.

A country is not made great by the number of its square miles, but by the number of its square people.

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* According to official figures published in "Svensk Trävarutidning", Sweden exported during 1922 a total of 1,173,000 long tons of pulps of all kinds. — (Author's Note.)

MORE BARNJUM FORESTRY PRIZES AWARDED

Prizes have been awarded in the Barnjum $2,000.00 prize contest for the most convincing arguments in favor of prohibiting the export of unmanufactured wood from Canada, as follows: First prize for the best essay in English, $500.00, went to J. R. Black, 33 Broadway Avenue, Ottawa. Second Prize $250.00 to Jas. R. Dickson, of Dominion Forestry Branch, Ottawa. Third prize $150.00 to H. C. Scott, 5 Golf Avenue, Pointe Claire, P. Q. Fourth prize $100.00 to Fred. Barnes, Belgo Paper Company, Shawinigan Falls, P Q. For the best essay in French, $500.00 went to Avila Bedard, Quebec, P. Q. Second prize $250.00 to Albert Trempe, Quebec. Third prize $150.00 to Eugene Rivard, Quebec. Fourth prize $100.00 to Henri Roi, Belgo Paper Comapny, Van Bruyssel, P. Q.

Mr. Barnjum states that the judges had a most difficult task in awarding these prizes owing to the very high order of the papers submitted, and that everyone of the contestants whether successful in winning a prize or not can feel happy in the knowledge that they have done their country a great service in assisting in the assembling of the great mass of arguments in favor of prohibiting the export of unmanufactured wood that are contained in these 549 essays sent in from every Province in the Dominion. They not only contain page after page of unanswerable arguments in favor of an embargo but also picture the story of forest devastation and forest conditions in each district from British Columbia to Cape Breton.

Ontario contributed 185 essays. Quebec 79. Nova Scotia 130. New Brunswick 79. Manitoba 17. Alberta 20. Saskatchewan 18. British Columbia 17. Prince Edward Island 9.

These essays both in English and French will be printed in book form in a series of volumes for free distribution and will form the largest and most valuable collection of data ever published on the subject in Canada, a copy of which will be mailed to each contestant as soon as printed. Volume 1 will be off the press in a few days.

PAPER FACTS

Compiled, January, 1923, by American Paper and Pulp Association, 18 East 41st Street, New York City

The United States has 854 paper and pulp mills of which 339 are pulp mills.

Based on value of product the paper and printing industry ranks 7th among American industries.

In 1922 the paper industry used 1,963,000 tons of waste paper.

In the same year it used 600,000 tons of rags.

In 1922 production of paper was approximately 7,000,000 tons.

In 1921 798,896 tons were imported and 48,927 tons exported.

The value of paper imports was $83,254,071 and of exports $25,690,060.

The world's production of paper is about 12,500,000 tons.

The per capita consumption in 1920 in the United States was 138.15 pounds of paper.

Ranking in value of product of paper and pulp the principal paper making states are New York, Maine, Massachusetts, Wisconsin, Michigan, Pennsylvania, Ohio, New Hampshire, New Jersey, Indiana.

BULLARD TO MANAGE DRYDEN PAPER MILLS

Coincident with the recent changes in the officers of the Dryden Paper Company, Limited, of Dryden, Ontario, there are also some changes in the personnel of that organization. Mr. Harold Fitch Bullard became general manager on April 1st, and his appointment to the position is but the reward of persistent application and the conscientious discharge of everyday duties.

Mr. Bullard was born in Schuylerville, New York, and comes of an old paper making family. He was educated at Phillips Exeter Academy at Exeter, New Hampshire, and completed his school work at the Rensselaer Polytechnic Institute at Troy, New York. After spending two years in the wall-paper business in Glens Falls, New York, he went to Grand'Mere in the employ of the Laurentide Company in 1912 as Chemist, which gave him an opportunity to come in contact with and study the various operations and departments. After spending three years in this position, he was in 1915 appointed superintendent of stores, and the natural outgrowth of this was his appointment as purchasing agent in 1917. His knowledge of manufacturing requirements have indicated his ability along managerial lines.

Mr. H. F. Bullard

We congratulate Mr. Bullard on his new appointment and wish him every success in his larger work.

Alexander MacDonald, Conservation Commissioner of New York State, has issued an outline of his forest policy for the State. He urges the absolute necessity of greater activity in reforestation if the State is to preserve its natural wealth and prevent eventual denudation of its valuable woodlands. The high spots in his plan are reforesting of non-agricultural lands, protection of the forests and the application of intelligent forest management to forest areas. Commissioner MacDonald announced it as his intention to take immediate steps to put his program into effect.

C. HOWARD SMITH ON EXHIBITION TRAIN

Members of the Canadian Manufacturers' Assn., from coast to coast plan to exhibit their products and manufactures in France this summer through the medium of the Canadian Exhibition train, C. Howard Smith, vice-president of the association announced Monday.

In making the announcement, Mr. Smith said:

"The most urgent need of Canadian manufacturers at the present time is to secure permanent foreign markets which will permit our factories to increase their prodution and to dispose of it immediately.

"Coupled with this need of foreign markets is that of a greater immigration to this country. Increased population means increased home consumption of our products and manufactures, greater production, consequently greater national prosperity. In all of these we are actually deficient.

"As a means of materially contributing to the solution of our problems, the scheme to send a train to demonstrate Canadian products and resources in France is outstanding. There are many manufactures which can compete very successfully in the French market if only they are properly exhibited and explained. Individual manufacturers who might have desired to develop a foreign trade have generally been deterred by the expense which would be attached to the attempt. This plan, however, to have our national products and manufactures displayed in the one huge, traveling exhibit is, in my view, the most effective agency through which we can secure this contact.

"Again, not only should the tremendous advertising which Canada will receive result in drawing a good number of desirable immigrants here, but should also attract French capital to the Dominion. While France, like many of the other European nations, may be in financial distress it does not necessarily follow that the individual investors are without money for attractive foreign investments. As a matter of fact it is actually towards foreign fields that these people are now looking.

"The Canadian Manufacturers' Association has not only officially endorsed the project of the Canadian Exhibition Train to France but our membership has responded in a highly gratifying manner by sending exhibits of their manufactures which are representative of virtually all phases of the Dominion's industrial activities."

PAPER NEWS BY RADIO

The use of the radio for the dissemination of information about the collection of waste paper and its importance to the paper industry is the latest step taken by the book paper and board manufacturers of the country toward relieving the present shortage by informing the public that there is a new and active market for this waste.

The editor of a western paper trade journal gave a talk from a Chicago broadcasting station on February 21, and the same message, at the suggestion of the Michigan Division of the American Paper Mill Superintendents Association, was broadcasted from several other stations in different parts of the country during the week from February 18 to 24.

A statement, notable for its brevity, and yet giving a complete analysis of the waste paper situation has been prepared by Felix Pagenstecher, president of the Bryant Paper Company, of Kalamazoo, for similar use. It is as follows:

"Make money and conserve our forests by saving waste paper.

"Six tons of waste paper is equivalent to the yield of an acre of timberland.

"The United States uses more than half of the paper made in the world.

"The mills spent $50,000,000 for waste paper in the year 1922. There is more waste paper destroyed than is used.

"Help yourself, your forests and your paper mills by starting now to save waste paper.

"This should particularly interest charitable organizations, churches, schools, janitors and boy scouts. The Salvation Army is paying for a big building in New York with waste paper."

Meanwhile, the work of promoting waste paper collection is going on actively all over the country. The Salvation Army recently announced that its waste paper work was so extensive that it would put up a special building in New York.

The Pennsylvania Paper Stock Company of Pittsburgh is co-operating with the Salvation Army in that city, and plans a special summer campaign of waste paper collection in co-operation with the Boy Scouts, to bring out supplies of waste paper for its collectors. This company conducts a definite advertising campaign

FORESTRY FEATURES PAPER CONVENTION

Forestry in all its phases, scientific and economic alike, will be shown in a most complete assembling of exhibits of forestry material in New York, during the week of April 19. The forestry exhibits, largely by government and educational institutions, will be part of the Paper Industries Exposition which will be held at the Grand Central Palace during the convention of the American Paper and Pulp Association, when some twenty separate associations in the paper industry will have their annual meetings.

The forestry exhibit is a recognition of the paper industry's leadership in the national campaign for forestry, and although the American Paper and Pulp Association is not holding the Exposition, it was at the request of the industry that forestry is being featured by the exposition management.

The New York State College of Forestry at Syracuse will have an exhibit to show methods of reforestation and fire prevention, while the United States Forest Service will have exhibits to show the relationship of the government to the whole forestry movement. The American Forestry Association will make an exhibit showing that proper forestry practice means a continuous supply of raw material for industrial uses, while continuing the reproduction of the forests as rapidily as timber is cut for the nation's industries.

The Forest Products Laboratory is sending from Madison, Wis., the exhibit of America's paper industry, in its relation to the forests, which the government used for the recent Exposition in Brazil.

Another booth will show the chemical utilization of products of the forest, dyes, artificial silk, all the wider range of chemical derivatives from wood, and a special motion picture program will have forestry pictures every day during the exposition. Meanwhile, the Woodlands Section of the American Paper and Pulp Associations, composed of foresters and woodlands officials in the employ of paper companies, will have a special session to discuss the technical side of forestry from the pulp wood forest standpoint.

PULP AND PAPER NEWS

Taking with them nearly $200,000 as a result of their winter's work in the bush, about 1,500 men engaged during the season by the Abitibi Pulp and Paper Company, have been released. Most of the men are young farmers from the Ottawa Valley, and they are returning to their homes with from $125 to $150 each on an average. The company is closing its camps but is retaining men for the river drives.

President Fred. L. Ratcliff tendered his farewell to the Toronto Rotary Club, his term of office having expired on March 1st., Mr. Ratcliff, who is head of the Ratcliff Paper Company, Limited, has gone on a trip to Atlantic City.

Notices have been sent out for the annual meeting of the Ontario Pulp and Paper Makers' Safety Association to be held in Toronto. Following the annual meeting the directors will meet and determine the winners of the shields in connection with the competition among the mills in the line of accident prevention. Last year in Class A the shield was won by the Dryden Paper Company and Class B by the Don Valley Paper Mills, Toronto.

Ontario pulp and paper men last week commented favorably on the proposal urged by W. C. Miller, of Fort William, to the Royal Commission sitting in Winnipeg, that the Dominion Government approach the Ontario Government with a request that a certain portion of the Nipigon Forestry Reserve be set aside where ex-service men might engage in the pulpwood industry. In his recommendation on the pulpwood industry Mr. Miller embodied another for industrial loans to ex-service men desiring to engage in business. It was pointed out that American interests are developing 80 per cent of the pulpwood industry in Northern Ontario and with industrial loans and wood limits granted, these returned men would be able to make good livings in that particular occupation.

The conservation of the timber resources of the Algoma district, the need for reforestation to replenish the depleted areas, the prohibition of the export of hardwood logs, and other needs were presented to the Ontario Government by a large and influential deputation from Sault Ste. Marie, Bruce Mines, Thesalon and thirteen townships that waited on it last week.

Joseph Kilgour, President of Kilgour Brothers, and also head of the Canada Paper Company, Limited, has returned to his home in Toronto, after spending some time in Florida and various other parts of the Southern States.

The annual meeting of the Canada Paper Company, Limited, with mill at Windsor Mills, Que., and warehouses at Toronto and Montreal, was held recently, when satisfactory reports of the year's operations were presented. All the old officers and directors were reelected for the current year, Joseph Kilgour being President and H. M. Thorne, Secretary-Treasurer, F. J. Campbell is the General Manager.

E. S. Crabtree, of Montreal, who represents the Brompton Pulp and Paper Company and also the Bathurst Company, was in Toronto on a business trip last week. He reports that the groundwood plant of the Bathurst Company, which has been shut down for a few weeks, owing to low water, has now resumed operations and that the market for sulphite and sulphate pulp is encouraging.

"Radiant" is the name of a new cover stock which has just been put on the market by the makers—the Canada Paper Company, Limited. It is made in five attractive colors in addition to white. On account of the brilliant colors which characterize the new cover it is especially suitable for advertising pieces such as booklets, folders and broadsides, which require to attract instant attention. It is also finely adapted for menus, programs and like classes of job work. The range of colors provides great possibilities for striking effects in multicolor printing, the colors being Cobalt blue, jade green, gold, ruby, copper and white. Radiant cover has a good antique printing surface and has the necessary strength to stand wear and tear in the mails. It is a companion cover to the well-known Fibrestoc cover which the makers call Canada's national cover paper.

Peter Meyers, representing the R. M. Meyers Paper Company, paper jobbers of Rochester and Buffalo, called on the Toronto paper trade recently.

Fred. M. Halls, of London, who is in charge of the new branch in London, Ont., of the Fred. W. Halls Paper Company, Toronto, spent the Easter holidays at his home in Toronto. He reports business in the paper line in Western Ontario as being fairly good.

George Davidson, manager of the Toronto branch of the Howard Smith Paper Company, has returned after a visit to Ashville, Tenn.

S. C. Knode of New York, Vice-President of the Albermarle Paper Manufacturing Company, makers of blotting papers at Richmond, Virginia, was a caller on the Toronto paper trade last week.

Mr. Fagan, of the Kimberly-Clark Company, Neenah, Wis., has been appointed superintendent of the sulphite plant of the Spruce Falls Company, at Kapuskasing, Ont. Mr. E. J. Jones has been appointed manager.

A. P. Costigane, secretary and engineer for the Ontario Pulp and Paper Makers' Safety Association, while on a visit to Northern Ontario, looked in at the new town of Kapuskasing and viewed the progress being made by the Spruce Falls Company in their pulp operations.

Jean Rolland of Montreal, manager of the Rolland Paper Co., Limited, was a visitor in Toronto last week.

Harry L. Muir, for some years connected with the Don Valley Paper Company, Limited, Toronto, as salesman, has severed his association with that company and is now with the Brantford Stationery Company, of Brantford, Ont., covering Ontario and the eastern territory. Mr. Muir is one of the most popular paper salesmen on the road.

The pulpwood season in the Port Arthur district has been an unusually active one. Over 2,000 men have been employed taking out pulpwood, ties and piling, the entire cut of pulpwood being estimated at 180,000 cords, with 20,000 pieces of piling and 1,450,000 railway ties. About 500 teams were engaged in the work and the cash paid to the men was round $750,000. The average wage of bush workers and contracting cutters is estimated at $60 a month clear, after paying board which was $1 a day. Contractors pay 15 cents apiece for ties and $2.50 for a single cord of pulpwood. Nearly all the work in the woods is now carried on on a piece work basis. The past winter has been a very favorable one for operations. The steady cold weather made camp conditions ideal, while the liberal snowfall made it safe to assume that there will be lots of water this spring to carry the wood down into Lake Superior and Thunder Bay for booming or shipment to the mills.

Some of the largest operators in pulpwood and the quantities which they took out and the location of their camps, we re as follows: Fort William Paper Co., camps on the G. T. R., 200 men, 30,000 cords of pulpwood, 150,000 ties; J. Greer, camps on G. T. R., 80 men, 10,000 cords of pulpwood, 100,000 ties; I. L. Mather, camps at Ignace, 250 men, 150,000 ties; Provincial Paper Mills, Limited, camps at Sibley, 350 men, 30,000 cords of pulpwood; the Stevedor Company (H. Murphy and G. E. Farlinger), Nezah, 400 men, 500,000 ties; G. E. Farlinger, camps on the G. T. R., 100 men, 10,000 cords of pulpwood; Scott Lumber Company, camps on the Current River, 75 men, 10,000 cords of pulpwood; C. W. Cox, camps at Nipigon and Black Bay, 300 men, 25,000 cords of pulpwood, 150,000 ties, 20,000 piling; Thunder Bay Paper Company, supplies from local farmers, 15,000 cords of pulpwood; Detroit Sulphite Co., yards at the Mission, supplies from local farmers, 10,000 cords of pulpwood; Russell Timber Co., camps at Hurkett, 200 men, 30,000 cords of pulpwood.

Mr. Angus McLean, of the Bathurst Company, Limited, Bathurst, N.B., has been elected president of the New Brunswick Lumbermen's Association. The executive of the Association have decided to make representations to the provincial Legislature urging that the Association be recognized by the Workmen's Compensation board. Mr. McLean takes a very strong interest in this question, holding that the assessment on the lumber trade is excessive. The industry is assessed four per cent. while others pay less than one per cent. It is also suggested that the employers should make a fair contribution to the fund.

Mr. A. S. Ginger, who severed his connection with the Howard Smith Paper Mills, Limited, Montreal, on March 29, was on that date presented by the staff with a sterling silver comport dish. The presentation was made by Mr. S. Howard Smith, the president of the Company. Mr. Ginger is leaving on the 20th inst. to take up his residence in London, England.

Mr. Angus McLean, of the Bathurst Company, Limited, was in Montreal last week.

Mr. Wismer, of the Mille Roches mill of the Provincial Paper Mills, Limited, paid a visit to Montreal last week.

Conditions in the Eastern lumber trade continue to be very favorable. American orders for spruce and hardwoods are still of large volume, with prices rising. The prices paid for the new cuts of hardwood represent a substantial advance over those of last year. The cut of lumber in Ontario Quebec, and the Maritime Provinces will be less than was at first estimated, due to the weather interfering with camp operations. This is especially true of the Maritime Provinces, where the abnormal snow storms held up cutting for sometime. All the pulp and paper companies are getting heavy cuts of pulpwood, the cost being larger than was expected on account of the higher wages which had to be paid to obtain the necessary help.

The sympathy of a wide circle of friends in the Canadian paper trade and in business circles generally will be extended to H. B. Donvan, sales manager of the Canada Paper Company, Limited, and chairman of the Book and Writing Section of the Canadian Pulp and Paper Association, in the death of his wife which took place at Oakville, Ont., where the family reside. Many men prominent in the Ontario pulp and paper trade attended the funeral which took place at Oakville, near Toronto, on March 30th.

ST. MAURICE PAPER'S STRONG POSITION

For the year ended on December 31, 1922, the financial report of the St. Maurice Paper Company, Limited, a subsidiary of the Union Bag and Paper Corporation, shows net profits of $445.075, which is equivalent to 5.63 per cent on the outstanding capital stock of the company. This compares with a net profit of $706,729 in the previous year, when however, there was written off inventories a sum of $703,240 in a readjustment to approximate market value.

Operating profits for the year under review are shown at $696,593, after provision for Government taxes, which compares with $1,046,679 in the previous year, and $2,440,250 in 1920, the company's record period. To the net profits of 1922 of $617,946 is added the previous balance of $617,946, making a surplus of $1,063,021. From this is deducted cash dividends paid during the year, amounting to $394,995, being at the rate of 1¼ per cent quarterly leaving a total surplus of $668,026.

The balance sheet section of the statement discloses the company's strong position well maintained, with, in fact, a slight improvement in working capital position showing.

GRINDING WOOD AT CORNWALL

The mill of the Glengarry Pulp Co. (formerly Cornwall Pulp & Paper Co.) is now in full swing, and with the exception of one grinder under repair, is working to capacity night and day. The pulp manufactured is of high grade and is readily sold in Canada and the United States. Improvements have been made which increase the efficiency of the mill, and the shipping facilities are made more convenient. Large quantities of wood are arriving, which ensures continuity of operation. The working force varies from 25 to 50, their wages being a welcome addition to the business of the town.

UNITED STATES NOTES

The report of the American Writing Paper Company for the year 1922 shows a deficit of $560,380 in comparison with a deficit of $1,944,775 in 1921. Gross sales were $15,327,720, compared with $12,069,346, and operating income was $891,036 in contrast with an operating deficit of $1,220,953. Total income amounted to $1,053,709 against a total deficit of $1,101,457. Holders of the American Writing Paper Company first mortgage 20-year sinking fund coupon gold bonds, due January 1, 1939, are invited to submit bids until noon May 1, through the offices of the Old Colony Trust Company of Boston, for the sale to it as trustee, of sufficient bonds to exhaust the sum of $151,402 available in the sinking fund.

The program for the motion picture exhibition to be given daily during the coming Paper Industries Exposition has been completed. It provides for the showing during the week of nearly forty reels of pictures. Some of the more popular will be given more than once.

Mr. Paul L. Houston who has been associated with the Paper Section of the Bureau of Standards since August, 1918, has resigned as assistant to the director to become president and treasurer of the Centennial Mills, Inc., of Valatie, N. Y. Mr. Houston's resignation creates a vacancy in the Section for a technologist who has had training particularly in physics with a knowledge of paper.

The American Pulp and Paper Mill Superintendents' Association will hold its annual convention early in June at Springfield Mass. Plans now being made are expected to result in the presenting of a program of unusual excellence. The recently organized Connecticut Valley division of the association is enthusiastic over the assigning of the convention to its territory, and the paper men in Springfield, backed up by civic and trade organizations promise to outdo Kalamazoo's effort in entertaining members of the craft.

C. C. L. La Boiteaux has sold his interest in the C. I. La Boiteaux Company at Cincinnati to Roger K. Rogan, the vice-president and treasurer of the concern. Mr. La Boiteaux retires as president and will be succeeded in that office by Mr. Rogan. The firm is one of the leading distributors of paper board in the United States. During the last ten years its volume of trade has doubled and now is on a $10,000,000 annual basis.

Investigations have been ordered by the United States Tariff Commission with regard to the tariff on casein, under paragraph 19 of the present tariff law.

The Appleton, Wis., Chamber of Commerce has sent the name of Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, to the United States Chamber of Commerce for appointment as head of the natural resources production division of the national body. The nomination was seconded by the local chambers at Oshkosh, Fond du Lac, Wasau and West Bond. An effort will now be made by the Appleton chamber to induce paper manufacturers all over the country to work for Dr. Baker's election. Dr. Baker made a very favorable impression upon F[illegible] River Valley manufacturers and business men who heard him speak at recent meetings in the Valley before paper men and Rotary Clubs. He is considered by them as being exceptionally well qualified to head the natural resources production department, one of the most important in the national chamber.

The Tenth Anniversary of the National Association of Waste Material Dealers has been commemorated with a handsomely bound and attractively compiled "Blue Book" covering the history of the organization from its inception in 1913 until the present. While neither a directory nor a catalogue, this volume contains a fund of information that should be useful to all buyers and sellers of waste materials.

Funeral services were held March 25 at Irvington on Hudson for Eugene Elsworth, who died March 20 at Daytona, Fla. Mr. Elsworth was well known to the trade as a paper manufacturer and wholesaler dealer. He was born in New York City in 1839. He entered the paper making field at an early age, and had long been identified with the firm of Hand and Elsworth. Mr. Elsworth was vice-president of the Holland Society of New York, and a member of the exclusive Ardsley Club. Two sons survive.

It has been proposed to make a paper horseshoe that shall for general purposes be the equal of the steel article in the following way: Parchment paper, is cut in horseshoe form and built up to a suitable thickness by the use of a mixture of turpentine, Spanish white shellac and linseed oil treated with litharge and the whole placed under a hydraulic press. This is said to produce very light and uniform pieces and it is an easy matter to stamp out the nail holes and grooves. Instead of nailing to the horse's hoof they can be applied with an adhesive composition whose principal part is a solution of rubber in bisulphide of carbon. Paper waste may also be moulded into the shape of a horseshoe by use of the press, but the result is not so good as with the process described.

LEACOCK SLAPS U. S. MAGAZINE TAX

"I admit the good-will and the high aims of our Parliament; I acknowledge the handicap of our magazine producer. But great as it is, I believe that on the whole interference by legislation would prove a mistaken step."

This is the opinion of Stephen Leacock, one of the foremost Canadian authors, concerning the measures suggested in the House of Commons and the proposal to levy a tax on the advertising of American magazines, with the view of encouraging Canadian periodicals.

"There are right ways and wrong ways of encouraging literature," he said. "It has to be remembered that literature is the work of the mind and not product of the factory. Industry may be encouraged by a protective tariff, but the mind is strangled by it. On general principles the good of the world is achieved by the freest possible dissemination of human thought. T[illegible] enlightenment [illegible] the [illegible] kind of tax[illegible]

A COMPLETE CANADIAN COMBUSTION SERVICE

The incorporation of the Combustion Engineering Corporation Limited, under a Dominion Charter is a step forward, an will be consulting to the purchasers of power plant equipment and consulting engineers in Canada.

Mr. A. J. T. Taylor, A. S. M. E., A. I. E. E., who is well-known as a mechanical engineer in Canada, is President and Managing Director. Mr. Wilfred R. Wood, Managing Director of the Underfeed Stoker Company, London, England, is Vice-President, Mr. George Usher of the Société Anonyme Des Foyers Automatiques, Paris, a Director, and Mr. John Anderson, Secretary-Treasurer.

The Combustion Engineering Corporation, Limited, has acquired the sole manufacturing and sales rights in Canada for the complete line of power plant equipment offered through the International Combustion Engineering Corporation of New York, the Green Engineering Company of East Chicago, the Underfeed Stoker Company, Limited, of London, England, the Lopulco Systems, Inc., the Quinn Oil Burning Systems, and the Société Anonyme Des Foyers Automatiques, Paris, France.

In addition to these lines which cover a complete range of fuel burning equipment, the Company will sell in Canada Economizers, Soot Blowers, Induced and Forced Draft Fans, Chimneys and Recording Instruments, in fact, everything in the boiler house, except the boilers.

The Corporation will co-operate closely with all consulting engineers, and will place freely at their disposal the services of its own engineers and by an arrangement with the International Combustion Engineering Corporation will have the benefit of the advice of such internationally known engineers as Henry Kriesinger, Research Engineer, formerly of United States Bureau of Mines, John Van Brunt, Chief Engineer, Combustion Engineering Corporation, John E. Bell, Consulting Engineer, New York, T. A. Marsh, Chief Engineer, Green Engineering Company, Samuel McEwen, Chief Engineer, Underfeed Stoker Co., London, I. Beuzit, Chief Engineer, Société Anonyme Des Foyers Automatiques.

The Combustion Engineering Company, Limited, is establishing a Research Department to give special attention to some of the fuel problems of Canada, particularly in regard to the coals of Western Canada.

Mr. John F. Farmer, M. E. I. C., A. S. M. E. of Montreal is Chief Engineer for the Corporation.

The Corporation already has important work in hand for the Imperial Oil Company and The Ford Motor Company, and many installations of its equipment are in successful operation throughout Canada.

One special advantage that will accrue to purchasers of power plant equipment is the facility with which the new Corporation can select from the best British, French and American practices, those pieces of apparatus that best fit the particular problem and then combine them to suit the special Canadian conditions.

Mr. Taylor, the Executive head of the Corporation, is thoroughly experienced in Canadian Engineering practice, and has done notable power plant work covering a wide range in the industrial field. He is a member of many of the leading engineering societies among them the A. S. M. E., A. I. E. E., A. I. M. M., C.I.M.M., is a Canadian by birth and will be ably supported by Mr. J. Farmer, of Montreal, whose reputation as a Mechanical and Hydraulic engineer is thoroughly established. Mr. Farmer is Chairman of the Montreal Branch of the E. I. C. this year, and is also a member of the local meeting committee of the A. S. M. E.

Mr. Wilfred R. Wood, of London, is internationally known as an authority on combustion problems, and is the directing head of the leading firm of stoker manufacturers within the Empire.

Mr. G. C. Usher will be remembered in this country as the former General Manager of the Green Fuel Economizer Co., which position he left two years ago to return to England. Mr. Usher is now in France in charge of important developments in Combustion Engineering equipment, which is now being undertaken by the Société Anonyme Des Foyers Automatiques.

SIDE RUNS OF THE PAPER TRADE

(U. S. Commerce Reports.)

The Polish Paper Industry

Polish consumption of paper at the pre-war rate is estimated at 4.2 kilos per capita, or a total of 118,000 tons annually for a population of 28,000,000. Present production is estimated at 36,000 tons, as against 62,000 tons for pre-war years, leaving an immediate potential deficit of 82,000 tons. Imports in 1921 were 30,833 and 2,627 metric tons of paper and paper products, respectively. In the first half of the year 1922 a total of 9,467 tons of paper were imported. (Office of Acting Commercial Attaché, Warsaw.)

Slackening Demand for Paper in Germany

The export demand for paper in Germany is reported to be good but domestic sales are slack, according to a cable from Commercial Attaché Charles E. Herring, at Berlin, dated February 9. As a result, it has been necessary to put some of the mills on part-time operation. German purchasers have been quoted a price of 1,170 marks per kilo on printing paper, effective February 1. The price announced for January 1 was only 560 marks per kilo.

Manufacture of Furniture from Pulp.

A German architect is reported to have invented a successful process for the manufacture of furniture from pulp. The product is said to be durable and is less expensive than wooden furniture. The Free State Government of Braunschweig is interested in the process and has presented the inventor with a site for a factory, which is now under construction. When the plant is completed production on a large scale will be started.

Papier-Mâché Bombs for the South African Air Service

The South African air service working on the use of papier-mâché in the manufacture of dummy bombs. It is reported that the air service is desirous of placing a trial order for about 2,000 with some South African manufacturer. The Premier Paper Mills has offered to supply pulp to any local concern attempting the manufacture. The bombs are hollow and are 21 inches long and about 4¾ inches in diameter at the greatest swell.

Prices of Swedish Kraft Paper and Newsprint

The average prices quoted January 5 on Swedish wrapping and newsprint papers, f. o. b. Swedish port, were: Kraft paper, 400 crowns per 1,000 kilos (1 crown=$0.2685 on January 5); sulphite wrapping paper, 350 crowns per 1,000 kilos; and newsprint in rolls of 50/52 grams, 300 crowns per 1,000 kilos. (Consul General D. I. Murphy, Stockholm, January 5.)

The Markets

CANADIAN TRADE CONDITIONS

Montreal, April 3. -- Conditions in the local paper trade are fairly good. Business is on a moderate scale, the jobbers reporting that orders are being received in satisfactory volume, although the size leaves something to be desired.

Representatives of mills state that there is no cause for complaint as to the amount of trade, but that in two or three departments prices are not as high as they should be, having regard to the advance in most raw supplies. With regard to the general commercial outlook, Canada is generally supposed to follow the lead of the United States in the matter of upward and downward trade movements. If that be true, the position here should materially improve, as advices from across the border report a widespread increase in trade, in which the paper industry is sharing.

With regard to newsprint, there is no let-up to the program for increasing Canadian production. Orders for two new machines have been placed with the Dominion Engineering Works, Limited, Montreal, and should the plans of the Manitoba Pulp and Paper Co., materialize, a further amount of newsprint will be placed on the market. That of course is looking some way ahead, but the mere fact that another newsprint company has been organized is significant of the confidence of some that there is room for additional tonnage. The Bathurst Company will commence making newsprint in August. The projected new tonnage program is very heavy, and it looks as if new outlets will have to be found for the output. According to a statement in an English paper, Great Britain is now producing approximately 500,000 tons per annum, as against 442,000 tons in 1920. Four additional machines are on order, which will make Great Britain about self-supporting in the matter of newsprint. This means that a very large amount of paper hitherto purchased in Scandinavia will have to be marketed elsewhere, and it is a natural inference that it will be offered in the United States, Canada's principal customer.

Prices in other sections are generally firm, with business on a good basis. There are however, no special features to report.

In connection with out export trade, and particularly with shipments to Australia, it is of interest to note the development of book and writing papers. Mr. C. Howard Smith has told of the possibilities in that direction, and the figures for the first two months of this year indicate that Canadian mills are alive to the openings in Australia and New Zealand. In February 325,900 lbs. of book paper were shipped abroad, as against 111,200 in the corresponding month last year. Of the former quantity Australia took 187,300 lbs. and New Zealand 109,800 lbs. The total for January and February was 742,100 lbs., compared with 123,000 lbs. in the two months' period of 1922. With the exception of 29,000 lbs. the entire production this year went to Australasia. In bonds and writings, a very marked increase is also shown. During February we exported 75,500 lbs. an increase of 52,800 lbs. Australia took 52,700 lbs. a gain of 16,000 lbs., New Zealand 4,600 lbs. and Japan 15,000 lbs. During January and February Canadian shipments were 149,400 lbs., an advance of 101,700 lbs. as compared with the 1922 totals. South African requirements fell away, but Australia, New Zealand, the U. S. A., and other countries bought much more heavily.

Canada continues to purchase freely of American Bristol and Bristol aboards and paper board and strawboards. In January the States exported 245,030 lbs. of Bristol and Bristol boards, 11,814 lbs. coming to this country; practically all for Quebec and Ontario. In paper board and strawboard, Canada is by far the best customer of the States. The total exports in January were 3,066,568 lbs. and of this 1,617,676 lbs. were shipped to Canada, Quebec and Ontario, buying 1,480,857 lbs. Cuba, China and New Zealand were the other large consumers.

In the pulp department, sulphite is firmer. The sales are increasing, and it is probable that the market will still further improve. The Swedish situation remains the same, the conferences between the mills and the workers having proved of no avail, British buyers who depended on Sweden for their supplies are naturally concerned as to the outcome of the dispute, while American companies who looked to the same source of supply are likely to come to Canada for at least part of their requirements. Inquiries to this end have already been received. Information reaching the Canadian Pulp and Paper Association is to the effect that some importers of Swedish pulp in New York have been notified that contracts entered into for the delivery of pulp cannot be fulfilled, and that the Swedish mills will be forced to take advantage of a clause in the contracts protecting them against contingencies beyond their control. Groundwood is in moderate demand, with prices about stationary. Bleached sulphite is still a good market. The orders continue to come in at a very satisfactory rate.

Ontario Market News

March passed out in a manner not calculated to improve business conditions and the paper trade shared, with other lines of industry, a few days of the dumps, due to the vagaries of the weather man. With extremely cold weather prevailing and a feeling of disappointment at the tardiness of spring, added to the Easter holidays, the paper consumer was in no humor to buy, nor was the dealer thinking of laying in stocks from the manufacturer. The volume of trading at the end of the month suffered in consequence. Some jobbers, however, report a pretty fair month's business, while others declare they fell behind. The month, on the whole, may be said to have been below the average in sales. Certain it is that neither the wholesaler nor the retailer are laying in big stocks. Talk of possible early advances in both high and low grade books, bonds and writings does not seem to have had any effect on buying. Mills, on the other hand are busy for the most part and profess to be unable to understand complaints of dullness in trade amongst the jobbers. Production of paper does not appear to have materially fallen off and in one instance it is known that one of the big book paper mills in Ontario has orders booked ahead until July 1st next. One manufacturer thought that the wholesaler was handling as much paper as ever but at a lower profit and it was on this that the wholesaler's complaint was really based. The converters of paper are extremely busy and manufacturers report that they are selling large quantities of paper to the manufacturing stationers. The light weight paper trade is keeping up well, manufacturers reporting a good demand, with firm prices in all lines of toilets and tissues and paper towels and specialties.

PULP. — Groundwood pulp still shows an easing off tendency. During the past few days it has shown a slightly firmer tone, although manufacturers are not getting any better prices than have existed for some weeks. The prevailing price is from $35.00 to $38.00 at the mill, with bleached sulphite book grade at around $100 and unbleached $70 for news grade and $80 for book grade, although some sales of book grade have been made as low as $75.00. There is a tendency to a little better prices on spot stuff and in respect to unbleached book pulp the price today might be $80 and five dollars less if the purchaser can wait. Generally speaking there is a lack of activity in the pulp market.

NEW YORK MARKETS

New York, March 31—(Special Correspondence)—Latest reports coming from authoritative sources are to the effect that paper mills in the United States, with very few exceptions, have sufficient orders on file to keep them operating at close to maximum output for about two months. This means that consumers are using paper at a rapid clip and that they are placing orders with mills without hesitancy insofar as their requirements in the near future are concerned. Demand for paper has been and is still of a volume that causes manufacturers to be somewhat cautious. Few are content to take on more business while sold well ahead, and they are proceeding in a careful manner and invariably are refusing to promise deliveries and are leaving the matter of price open until shipments are made.

That the paper industry is in a healthy and active position cannot be denied. The movement of supplies into consuming channels is about all that producers and dealers could hope for, and the most pleasing feature of the situation is that the prevailing activity gives promise of continuing for sometime to come. It is generally expected that early in the summer the demand for paper of nearly all kinds will ease off to some extent —this is a market development that seldom fails to occur—and manufacturers and jobbers look for a quieting down of the market, but in the meantime or during the next several months indications are that demand will rule brisk and that mills will be pushed to make all the papers wanted by consumers.

The Federal Trade Commission's report on the newsprint industry for February shows that activity in the print paper trade kept up at a lively pace in that month. Actual production of newsprint last month was somewhat less than in January, but this was due to the shorter month and the occurrence of several holidays. Production of total newsprint in February by United States mills amounted to 114,611 tons, compared with [illegible] tons in January, [illegible] tons in February of last year, [illegible] tons in February two years ago, [illegible] tons in February three years ago, 103,248 tons in February four years ago, and 93,504 tons in February five years ago. A total of 74 mills reported to the Commission in February.

Figuring on the basis that during February there were but 22 working days, eliminating four Sundays, and two holidays, it is found that the average daily production of newsprint in the States in that month was 5,118 tons, whereas in January but 4,902 tons was produced daily on an average, based on 26 working days. These figures would show that print paper mills ran at a better rate of capacity in February than during the first month of the year even though the total output for the former month was less than in the latter month.

Of the 114,611 net tons of total newsprint produced in February, 104,683 net tons were standard news, which output compares with 117,497 tons in January of this year, 91,050 tons in February last year, 94,823 tons in February, 1921; 105,342 tons in February, 1920; 94, 224 tons in February, 1919, and 83,474 tons in February, 1918. The average monthly production of print paper during the past five years was 102,534 net tons of total newsprint and 93,288 tons of standard news, so that February, 1923, output was approximately 12 per cent above an average for the five-year period for both total newsprint and standard news.

Figures in the Commission's report relating to stocks show that mill holdings of total newsprint increased but a trifle during February while those of standard news decreased, thus showing that manufacturers shipped out all of their current production during the month in spite of the heavy output. Mill stocks of total newsprint at the beginning of February amounted to 23,004 net tons, and at the end of that month to 23,200 tons, while stocks of standard news at the outset of February were 18,457 net tons and at the close of the month 18,191 net tons.

Newsprint continues to move in consuming channels in heavy volume, and there is no sign of any sagging of demand. Instead publishers are almost constantly in the market and are frequently placing orders for spot deliveries to augment their contract commitments. One of the New York afternoon papers yesterday printed an issue of 54 pages, and this paper is the one which has the largest circulation of any local daily. This in itself tells the story of the strong market position of print paper.

Book papers are firmly quoted and are wanted in increasing amounts. Mills are busy and are sold ahead. Fine papers are showing more activity than in a long time and prices are stiffening though no actual changes have been recorded this week. Kraft wrapping paper is in active demand, and tissues have moved freely for some weeks past.

Box boards are in a fairly lively market position. There is room for improvement in the demand but aggregately a good movement of boards is progressing, and quotations are maintained at about $70 per ton for news board and $65 for plain chip.

GROUND WOOD—Developments are lacking in the mechanical pulp situation. Reports generally tell of a moderately large movement of supplies toward consumers and yet the price tone is anything but strong. Indications are that grinders in at least some cases are pressing pulp onto the market and that buyers therefore are securing some supply at concessions. Down to $35 per ton has been mentioned as a level at which producers are selling ground wood though it should be stated prices this low invariably emanate from such sources as Canada where a heavy freight rate is involved in transporting the pulp to consuming centres. Domestic grinders are quoting around $12 per ton f.o.b. pulp mills and are said to be receiving this figure or better in most sales. Moreover, one of the largest dealers in Canadian ground wood reports that the bulk of his recent sales have been at $37.50 and higher at grinding plants.

CHEMICAL PULP—Prices of chemical pulp continue to stiffen. Demand is growing livelier day by day, and, according to reports the situation in some quarters is assuming a condition bordering onto a boom. Consumers do buy any lots of pulp available at prices which appear reasonable. Importers, and for that matter domestic producers also, are bullish in their views and are constantly marking up prices, slowly though steadily. Foreign prime unbleached sulphite is quoted in New York at 3.25 cents per pound ex dock, with some quotations beyond this figure named, while easy bleaching sulphite is priced at 3.50 cents. Imported bleached sulphite has sold up to 4.90 cents per pound ex dock New York, and down to 4.25 cents, depending on the quality of the pulp involved, while Scandinavian kraft is quoted firmly at about 3.20 to 3.25 cents on the dock here. Leading domestic producers quote 5 cents per pound f.o.b. pulp mills for No. 1 bleached sulphite, and 5.25 cents for the selected grade; 3 to 3.25 cents for No. 1 unbleached sulphite, 2.85 cents for news grade sulphite and about 3.25 cents for No. 1 kraft. Bleached soda pulp is quoted at around 4.10 cents a pound f.o.b. producing mills.

The lockout in Swedish pulp mills continues, and latest advices say that there are no visible prospects of any early settlement of the difficulty leading to an ending of the lockout. The longer this situation exists abroad, the stronger will the pulp market here become, it would seem.

RAGS—All kinds of papermaking rags are firmly quoted and are wanted in good amounts by mills. Business during the current week has been active; consumers have been busy operators in the market, and dealers, well supplied with orders, are actively engaged covering their commitments. Prices have continued to move upward. Roofing rags lead the movement and are selling freely at 1.90 cent and higher per pound f.o.b. New York for No. 1 packing, and around 1.80 cents for the No. 2 grade. Old thirds and blues are advancing, and country dealers ask 2.75 cents and more for repacked blues, while miscellaneous packing is bringing 2.25 cents and higher. Old white rags are in active demand and are selling at fancy prices, it being stated that extra fine packing of No. 1 whites has brought as much as 9 cents a pound in sales to writing paper mills. New cuttings hold firm in price though no further changes of importance are noted. Papermakers have let up a bit in their purchasing of new rags but dealers are well supplied with orders and this keeps quotations on strong levels. No. 1 white shirt cuttings the quoted at 14 cents a pound f.o.b. New York, unbleached muslins at 12 cents, light silesias at 8.50 cents, washables at 5.50 cents, and blue overall cuttings at 8 cents.

PAPER STOCK — Contrary to the situation prevailing in wood pulp, rag stock, old rope and other kinds of papermaking material, prices of waste paper are on the downtrend. High grades show no broad changes but the low qualities are easing in price at a rapid rate, and the market tone exhibits considerable

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weakness. The reason for this is hard to explain. Demand is fair, and there appears to be no over supply, yet notwithstanding values are sagging. New York dealers quote No. 1 hard white shavings at 4.25 cents per pound f.o.b. this city, No. 1 soft white shavings at 3 65 cents, heavy No. 1 magazines at 2.40 cents, old kraft paper at 2.20 cents, white blank news cuttings at 2.30 cents, ledger stock at 2.60 cents, folded newspapers at 1.20 cents, and No. 1 mixed paper at 1.05 cents. Sales at even below these prices have been recorded in certain instances.

OLD ROPE AND BAGGING — Old manila rope is quotably firm and is moving in steady amounts. Paper mills are granting 6.75 to 7 cents a pound at shipping points for No. 1 domestic manila rope, and within a quarter of a cent of this level for foreign rope. Old bagging presents no feature. There is a moderate movement of roofing bagging at between 1.10 and 1.15 cents a pound at dealers' points, while No. 1 scrap bagging is quoted at around 1.25 cents. Old gunny bagging is firm at about 1.65 cents a pound at shipping points.

TO UTILIZE ENORMOUS WASTE

Utilization of immense waste from lumber by carbonizig and pressing into fuel briquettes equal in value almost to anthracite has been accomplished in sawmills in the Pacific Northwest, the National Lumber Manufacturers' Association claims. The process, besides supplying the charcoal briquettes, gives byproducts such as tar oil, fuel gas, acetone and alcohol. It is said it will make comparatively cheap fuel available to metallurgical and other industries as well as to homes. It will also facilitate the clearing of cutover land, give the farmer a return on material that ordinarily hampers preparing of the soil, reduce the cost of reforestation, and reduce the losses through forest fires by elimination of the dangerous piles of waste left by the lumber cutters. The new carbonizing and briquetting process has been developed in a plant at Centralie, Washington, and it is planned to erect ten commercial briquetting mills from Vancouver, B.C., to Marshfield, Ore. It is pointed out that the potential amount of the new fuel possible by the process if applied to the entire lumber output of the United States would be nearly ten million tons of the briquettes annually.

Importers of pulp board will be required to pay a duty of 10 per cent ad valorem unless they can furnish proof that the pulp board imported is intended for use in the manufacture of wall board, according to a letter sent last Friday to the collector of customs at Buffalo by Assistant Secretary of the Treasury Moss. Referring to the fact that his attention had been invited to the practice of importing pulp board in rolls, both for use in the manufacture of wall board and for other purposes, as has been done in the Northern New York district, Mr. Moss stated in his letter that the Department concurred in the district collector's views that the rate of duty under Paragraph 1302 of the Tariff Act on this material depends upon the use to which it is to be put. It is claimed that some importers have been diverting the pulp board for paper mill wrappers and other purposes which should call for a higher rate of duty.

Wood Pulp Trading Co., Ltd.

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OF CANADA

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EDITORIAL

TRYING THE NEW

Among the few things that remain in the editor's cranium, from school days, is the verse which reads

> "Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside."

Progress has been made in the Pulp and Paper Industry, as well as in other lines of business, because of the courage of those who dared to change the course of the current. In some cases, the change has been easy, but in other cases it has required, not only a great deal of courage, but a lot of expense and worry, before things have been made to run smoothly in the new channel. When a stream is constrained to follow a new course, or to cut a new channel, it does not at first flow smoothly, and it has to be navigated with care. For awhile, perhaps, it is possible to go by either of the branches, but if it is a stream important to navigation, we usually find the shorter course developed for safe passage.

A number of important improvements have been made in paper making methods within the last few years, and among those which apply to the paper machine, we might mention particularly the Sectional Electric Drive, the Suction Couch Roll, the Machine over 230″ wide, and the Machine which runs at more than 1000 feet per minute. It is a great credit and honor to the paper makers of Canada that mills in this Dominion have been the leaders in making many of these remarkable improvements. The Abitibi Company installed the first super wide machine, the Laurentide Company installed the first super speed news machine, and the Laurentide Company, the Abitibi Power and Paper Company, Howard Smith Paper Mills, the Interlake Tissue Mills and the Spanish River Pulp and Paper Mills were among the first — in fact, in some cases, were the first, to install the Sectional Electric Drive, of various makes, for the operation of machines making a variety of grades of paper. Canadian mills were among the first to appreciate the values of the suction couch roll, and Canadian paper mill managers and machinery builders have made improvements on the design of this part of the machine.

Recently, two machines for newsprint were built by the Dominion Engineering Works for the St. Lawrence Pulp and Paper Co., Ltd, and a number of novel features, some of them heretofore untried, were boldly incorporated in the design of the machines. Some difficulty was anticipated in getting acquainted with the new arrangements and devices, but it stands to the credit of Canadian enterprize that these difficulties were less than had been anticipated and the machine was early satisfactorily producing high grade newsprint paper. As a matter of fact, by the time the first machine was ready to operate, the product of it was already due for delivery to a customer, and the machine simply had to be operated. It was somewhat like the case of the colored boy who stood watching a woodchuck hole. When a stranger asked him what he was doing, the boy told him he was watching for a wood chuck. The stranger told him there was no woodchuck in that hole, and the boy, proceeding to dig, told the stranger that there simply had to be a woodchuck in that hole, because the minister was coming to dinner, and there was.

The fact is that the first St. Lawrence machine has been operating for sometime, and producing newsprint on which is printed one of the finest newspapers in the United States, namely, the New York Sun. We have seen samples of the paper, and we have seen a copy of the newspaper, and there is no doubt of the satisfactory quality of the product, although we believe that, with longer experience in the operation of the new machines, even the present good quality of the paper will be considerably improved.

An aeroplane view of the exterior of the St. Lawrence mills, was published in the Pulp and Paper Magazine a short time ago, and after the Paper Convention is over in New York, the editor is going to see what the inside of the mill looks like, and will then give readers of the Magazine some information with regard to details of the improvements that have been made in paper machine design by the St. Lawrence Paper Mills in cooperation with the builders, the Dominion Engineering Works.

PUBLIC ECONOMY

Economy in public expenditures, whether Dominion, Provincial or municipal, should be the watchword for 1923. The present Finance Minister, during the past year has taken occasion to emphasize the necessity for the country to practise economy, and has made an earnest effort to reduce expenditures. But, in spite of this, the country has not succeeded in reducing its national debt. There are only two ways in which this can be done either by increased taxation or by further reduction in expenditure. Now, if trade is to make anything like a rapid recovery, it is necessary that there should be not an increase, but a reduction, in taxation. Business cannot expand if it is hampered by *res angusta domi*. During the boom period business profits and reserves were taxed almost "hand over fist." Then, when the leaner years came, these profits and reserves, which should have been available to enable industry to pass through these leaner years with as little disturbance as possible, had melted away.

We are very far from disputing the stern necessity of raising sums of great magnitude, by way of taxation, for many, many years ahead. In fact, this necessity is an inevitable sequel to the war. In part, it arises from circumstances, in connection with our railroad system, over which it is useless now to repine. But, at least, it is time to call a halt to the process of embarking on new expenditures, unless these are absolutely unavoidable.

WHEN "WATERED" STOCK IS NOT WATER

With a show of disgust a Toronto business man pointed to an editorial in a daily newspaper on the subject of "watered" stock. The article condemned the issuance of stock in a company beyond the actual cash investment by the promoters and investors.

"How the people will eat that up," commented this business man. "They love to be told that the corporations are out to steal their bread and butter from their mouths and their shirts from off their backs. And the paper fills up its readers with tommy-rot about a subject the editor knows nothing about. Look at the headline!" The headline contained statements that had no foundation of truth in the story below them.

"Watered stock!" exclaimed this business man. "How about watered headlines?"

He proceeded to tell about a company he had formed once. He got $250,000 of common stock in the company —about a quarter of the total—when it was formed. "They called that watered stock," he complained. "But for two years I scarcely slept a wink when I was organizing that company. I took up options on plants and bought up others. I dickered and argued and fought and rushed around the country until I was almost a physical wreck. I saved the new company many thousands of dollars. I threw my last cent in the pot and tossed my shoe strings after it. One time I had $330 in the bank and wrote my cheque for nearly a million. It worked out all right but if it hadn't I hesitate to say what would have happened. And when all was smoothly running I got $250,000 in common stock, which might be worth something if my project proved a success. That's watered stock. Let me tell you that the water in my watered stock wasn't water at all. It was sweat."

Admitting that there are dozens of corporations that have inflated their securities to a dangerous point; admitting that the public as consumers of the company's products suffer, though not a tenth degree that the shareholders suffer, isn't there reason to pause before indiscriminately talking about watered stock? A great deal of so-called watered stock does not represent water but rather the hard work of a far-seeing business man; the inspiration of his mind and the perspiration of his brow; the intangible but tremendous value of ideas that are the result of creative thinking and work that is the essence of individual effort. Such stock is recognized by investors as having a real value even when they secure it as a bonus because they are then willing to pay for the senior securities a price above the real market value of stock or bonds in a new enterprise.—The Financial Post.

CHEMICAL RESEARCH

Summarising his conclusions at the close of his address on "The Organization of Research" before Section B. (Chemistry) of the British Association at Hull, Principal J. C. Irvine, D. Sc., F. R. S., remarked that the first and most important condition is that in each institution there should be a Board or Standing Committee entrusted with the supervision of research. The functions of such a body would be widely varied, and would include:—(1) The allocation of money voted specifically from university or college funds for research expenses.

(2) The power to recommend additions to the teaching staff in departments actively engaged in research.

(3) The recommendation of promotions on the basis of research achievement.

(4) The supervision of regulations governing higher degrees.

Among the more specific problems which confront this Board are the following:—(1) The creation of research libraries where reference works can be consulted immediately. (2) The provision of publication grants, so that where no periodical literature is available the work will not remain buried or obscure. (3) The allocation of travelling grants to enable workers to visit libraries, to inspect manufacturing processes, and to attend meetings of the scientific societies. The author was convinced that it was a mistake for a governing body to call for an annual list of publications from research laboratories. Nothing could be more injurious to the true atmosphere of research than the feeling of pressure that papers must be published or the Department would be discredited.—Foundry Trade Journal.

LETTERS TO THE EDITOR

13 New Machines in Canada! Another Reason!

Dear Sir, —

You will be interested to learn that there are **thirteen** new paper making machines being installed in Canadian paper mills this year.

These thirteen machines, when erected and running full, will consume more than 350,000 additional cords of wood a year.

Not counting these machines, Canada is already consuming and exporting annually more than 5,000,000 cords of pulpwood representing the growth of a century or more, from 1,250,000 acres of land.

Every **new paper machine** installed in Canada and **every new issue of pulp and paper securities** brought out and sold to our people is an added reason for prohibiting the export of raw wood from Canada.

Yours very truly,
FRANK J. D. BARNJUM.

Provincial Pulp and Paper Mills, Ltd, have appointed Carmichael & Co., Ltd, as their agents in Australia. Carmichael & Co. have offices in Sidney, Melbourne, and Auckland, and handle a large amount of Canadian paper. A recent visitor at their Sydney office was Mr. W. Gorman of the Provincial mills.

Freeness Testing in a Newsprint Mill[*]

In recent years an increasing amount of work has been done on freeness testing. Whereas in the past, the freeness test was used almost exclusively in connection with the beating control of paper stock, within the last two or three years a number of the leading newsprint firms have instituted the freeness test to aid the control of both the paper machine stock and the ground-wood stock. In most cases, however, the freeness test is still in the experimental stage and there are as yet no standard methods of procedure, each firm having its own methods, which differ widely with those of other firms. Even the actual apparatus employed is not standard, some firms using the sedimentation tester and others various types of freeness (or slowness) testers. The Star Brass Manufacturing Company of Boston have done much to obviate this difficulty by introducing on the market a very practical type of freeness tester and it is encouraging to note that this company have recently put on the market a new and improved design. The same may be said of John Date & Co., Montreal.

It is my purpose in this essay to discuss the significance of the freeness test and to outline the methods of testing as employed in the newsprint mill of Price Brothers and Company, Limited, at Kenogami, P.Q. Also to describe somewhat fully the work which has recently been carried out in this mill to utilize the freeness test as a means of groundwood control.

Factors Influencing Freeness

In volume 3 of the textbooks on the Manufacture of Pulp and Paper, freeness of the stock is defined as "The rate of drainage of water from the sheet through the cylinder mould or fourdrinier wire." In a given sample of stock, therefore, there are four factors that influence the freeness: — First, the consistency of the sample; secondly, since the viscosity of water varies with the temperature, the temperature of the sample will be another factor. Incidentally, it has been found by experiment that the variation in freeness due to different temperatures, varies for different consistencies; thirdly, the amount of white water present in the sample, and fourthly, the quality of the fibres. Some authorities state that the degree of hydrolysis of the fibres is another factor influencing the freeness, but very little is known about this and according to the experiments carried out in this mill on groundwood stock, the variation in freeness is due almost entirely to the physical characteristics of the fibres, and in unbeaten stock, hydrolysis is a negligible factor. Since the freeness test is carried out to determine the quality of the fibres, and if this together with the amount of white water present be considered as one factor, in carrying out a test it only remains to keep the temperature and consistency of the samples constant.

Apparatus Employed

In all tests carried out in this mill, the Green freeness tester, as manufactured by the Star Brass Manufacturing Company, of Boston, is used. This consists of a brass cylinder holding exactly one litre of water; the cylinder has a brass plate at the bottom perforated to correspond approximately to a 60 mesh wire sieve. At the top and bottom of the cylinder are hinged covers fitted with rubber gaskets, making the apparatus water tight. The top cover has a small hole into which is screwed a cock; directly below the cylinder is a copper funnel with a ⅛ inch hole at the bottom and a short way up the side is a ½ inch overflow tube projecting slightly into the funnel. The apparatus is set up on a vertical stand, (see fig. 1) ensuring rigidity and easy manipulation.

The laboratory used for pulp testing is situated fairly centrally in the mill, and contains a sink about four feet by three and eighteen inches deep. The sink is equipped with four water taps, two of which are used as suction pumps. The stand, to which the freeness tester is fixed, is set up in the sink. The remaining apparatus employed may be listed as follows: — one rough balance; one chemical balance with counterpoise, covered weighing dish; one suction flask; a 13 cm. Buchner funnel; two 1-quart tin measuring vessels for use on rough balance; one 250 c.c. graduate; one litre graduate; electric iron; one small low heat, electric hot plate; one large electric hot plate, electric oven; linen filter cloths, cheesecloth and centigrade thermometers.

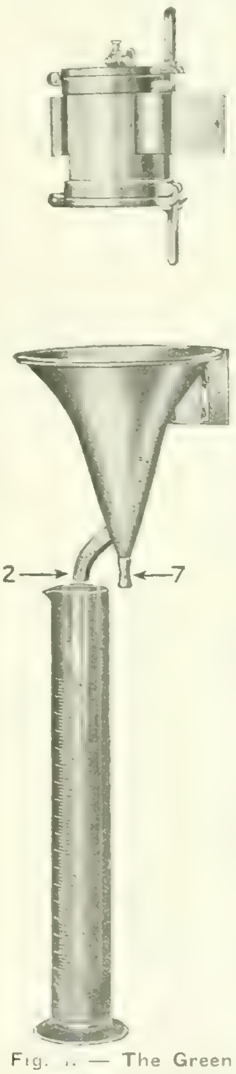

Fig. 1. — The Green Freeness Tester mounted on vertical stand.

General Method of Procedure

The method of sampling varies according to the stock to be tested. After securing a representative sample, the stock is diluted in a bucket with fresh water to approximately 0.4 per cent consistency. With a little practise this can be done within the limits of 0.35 and 0.45%; the approximate consistency of the sample is generally known, so that it is an easy matter to dilute it up within these limits. About 5000 c.c. of the sample is required at this dilution. It is then necessary to determine two factors; the consistency of the sample and the freeness of the sample at this consistency. All freeness tests are run at a constant temperature of 20° C.

The consistency is first determined as follows:—one of the quart measuring vessels is placed on the rough balance and counterpoised, with another quart measure; the sample in the bucket is well stirred and a little over 1000 c.c. of the stock is removed and exactly 1000 grams is weighed out in the quart measure on the balance. This is poured into the Büchner funnel and filtered through a piece of linen by means of a suction pump and flask; the wet pad of stock so formed is removed from the funnel, the piece of linen is carefully removed from the pad and any stock adhering to the linen is rubbed off with the finger. The pad is placed between two layers of cheesecloth and dried on a low heat hot plate by pressing with an electric iron. When the pad is practically dry, the cheesecloth is removed and the pad is placed directly between the hot plate and the iron. The iron can be made sufficiently hot by placing it on the low heat hot plate when not in use; it is unnecessary therefore to connect it to a circuit. The pad is finally placed for a few minutes in an electric oven at 125° C. The dry pad is then placed in a counterpoised weighing vessel and weighed on the chemical balance before it has had time to cool. The weight of the pad, divided by ten, gives the percentage consistency of the sample.

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[*] Essay by Frederick W. Bradshaw submitted to Technical Section of the Canadian Pulp and Paper Association.

While drying out the pad, the freeness of the sample can be determined. The temperaure of the stock in the bucket is brought to exactly 20° C. the sample is well stirred, and 1000 c.c. removed and poured into the freeness tester, up to the level of the top. The lid, with the cock open, is shut and clamped; the cock is then shut making the cylinder air tight. The bottom is then opened and the cock opened immediately after, thus allowing air to enter the cylinder permitting the water to pass through the perforated plate. This must be done carefully and quickly, care being taken not to spill any of the stock over the side of the cylinder into the funnel and not to allow the fibre time to settle. The sudden rush of water formed by opening the cock, partially fills up the bottom of the funnel, and comes over through the ½ inch overflow into a 250 c.c. graduate placed beneath it. A mat of stock immediately starts to form on the perforated plate and checks the flow of water. After a minute or two, the ⅛ inch orifice at the bottom of the funnel is sufficient to take the reduced flow, whereupon the level of the water in the funnel falls and the water ceases to pass through the overflow. As soon as all the water from the overflow has been collected, the test is complete and the freeness of the sample measured in cubic centimetres by the volume of water in the graduate. Three tests are thus made and the average taken; the readings should not vary by more than 6 c.c. and in practise they are seldom found to vary by more than 3 c.c.

From freeness-consistency curves, the corrected freeness of the sample is obtained at 0.4% consistency. These curves have been accurately determined from different kinds of stock and each kind at various consistencies, all tests being run at 20° C. Supposing, therefore, the average freeness reading of a sample of stock at 20° C. and 0.425 % consistency is 99, then by finding the point 99-0.425 on the curve and drawing an imaginary curve through the point, parallel to the nearest curve, to meet the 0.4% consistency line we get the corrected freeness to be 106. (See accompanying curves). In this manner the corrected freeness of a sample may be determined accurately in about fifteen minutes; tests have been carried out to check the method by taking large samples and running independent tests on the same sample, and these tests have never been found to vary by more than 3 c.c. in the final corrected freeness. When running a test, the following points should be carefully observed:

1. — Always stir the contents of the bucket well, before removing a sample of stock for the consistency or freeness determinations.

2. — Never weigh out any stock in the quart measure on the rough balance, without first making sure that the quart measure is empty and correctly counterpoised.

3. — When drying the pad of stock, take special precaution not to scorch it, causing loss in weight. If there is any doubt about its being dry after weighing once, replace it in the oven for a few minutes and weigh again.

4. — At all times keep the tester and any apparatus employed, quite clean and free from stock which is bound to cling to the sides of the buckets and measures.

TESTS MADE AND METHODS OF SAMPLING

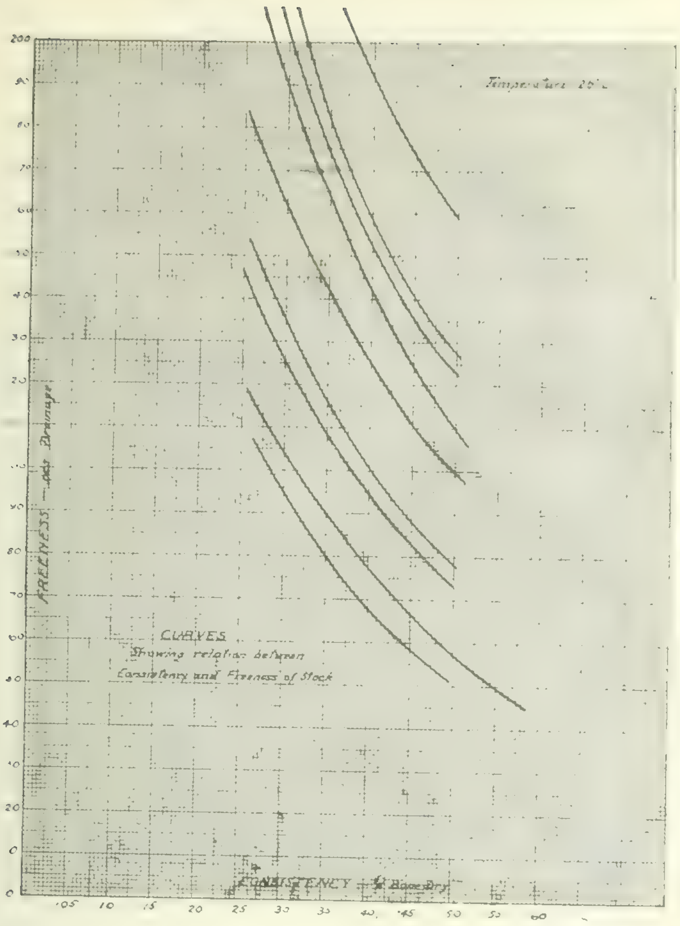
In the mill laboratory, the following freeness tests are determined once every two hours:—

Thin Grinder Stock. — In one corner of the wet room the main stock line from the grinder room passes to the screens. From a tap in this stock pipe, about two-thirds of a bucket full is taken as a sample. The consistency of this stock runs generally about 0.7% to 0.8%; 3 litres of the stock are made up to five litres with fresh water, thus giving a consistency of approximately 0.4%. The corrected freeness is then determined as described above. This test is used chiefly as a check on the test of the groundwood regulator stock, as it has been found that the freeness figure of this stock is of little other value, since, due to the fact that it is unscreened stock, and the varying amounts of white water added in the grinder room, the freeness figure is not a true indication of the quality of the fibres.

Groundwood Regulator Stock (G. W. Stock): — The deckered groundwood and sulphite stocks pass through the percentage regulator to the mixing tank. This regulator consists of two balanced troughs set opposite each other, one for the groundwood and the other for the sulphite. A grab sample of about 1500 grams is taken from the groundwood trough on the regulator. The consistency of this stock runs generally round 4.0%, the actual consistency of the stock on the regulator. Therefore, in order to save an extra consistency determination, exactly 1000 grams of this stock is weighed out in a quart measure on the rough balance, and diluted to exactly 10 litres. The corrected freeness of this is determined as described above, and the consistency obtained is one-tenth of the original consistency of the stock on the regulator. A test was carried out to check the accuracy of the grab sample in this case. First a grab sample of 1500 grams was taken and then a sample consisting of small amounts of stock, collected at intervals of about 30 seconds, until 1500 grams had been collected. Such a test was made on three separate occasions and in each case the corrected freeness figures obtained did not differ by more than 3 c.c.

The corrected freeness figure, as obtained from the groundwood regulator stock, is the best indication of the quality of the groundwood. Unfortunately, however, by the time the freeness figure of the G. W. Regulator stock has been obtained and telephoned down to the grinder room, the stock tested may have left the grinder room two or three hours before. This will be discussed more fully later.

Paper Machine Stock (P. M. S.). — Two tests are made on the stock from the paper machines, one at 20° C., and corrected to 0.4% consistency, and the other "as run". A bucketful of stock is taken from the flow box of the paper machine and a test is run at the temperature and consistency of the stock as run on the machine. The stock is then made up to 0.4% consistency and brought to 20° C., and another test is run. (A test, be it remembered, consists of the average of three freeness readings). Thus a corrected freeness figure for the P. M. stock is obtained and a freeness figure "as run." The latter is very important, since the whole object of the freeness test is to control the conditions of the stock on the paper ma-

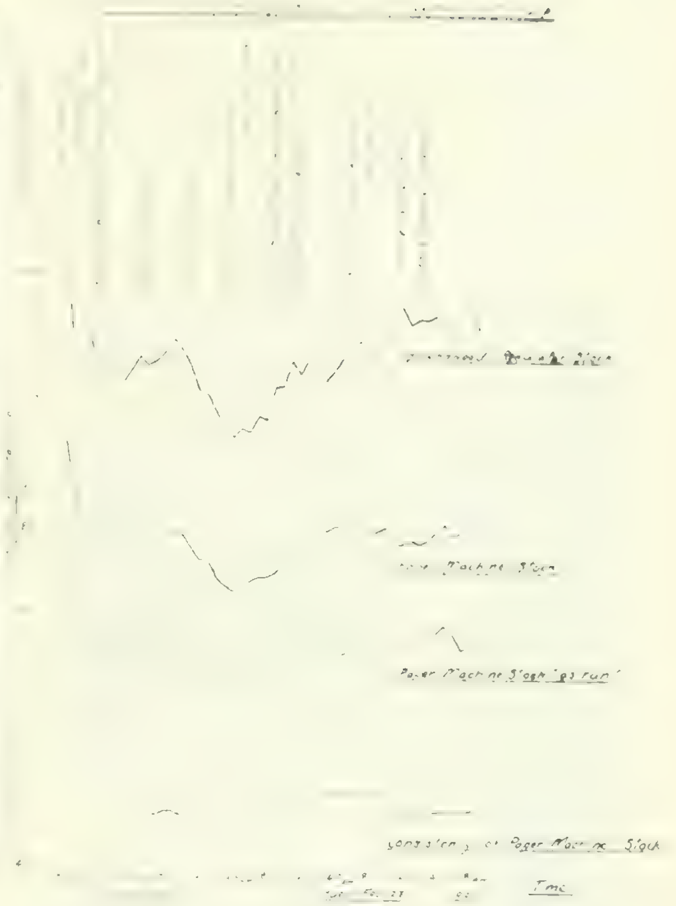


chine and the ideal is a uniform figure for the P. M. S "as run."

Significance of the Freeness Test

In January and February 1922 a test was made to determine the relation between the running quality of the stock on the paper machines and the freeness figures obtained. This was to ascertain whether the freeness test is a real indication of the running quality of the stock. At regular intervals of one hour, samples were taken from the flow box of No. 2 paper machine. The freeness figure of the paper machine stock "as run," was determined, as well as the corrected freeness figure. Together with these, the corrected freeness figure of the groundwood regulator stock was also determined at regular intervals of one hour. Forms were provided for the machine tenders of No. 2 machine, who recorded all data on the behaviour of the stock on the machine. If the stock was too free, the white water valve would be opened a little and closed slightly if the stock was too slow. All such data was fully recorded. The test was run from 8 a.m. January 18th until 8 a.m. March 1st. A chart was made recording hourly variations and any data as supplied by the machine tenders, throughout the whole test. A portion of this chart is reproduced herewith, and may be taken as being typical of the results obtained throughout the test.

From the data thus recorded, it was evident that the Green freeness tester gives reliable information as to the draining qualities of the stock on the paper machines. Moreover, it can be clearly seen from the curves, that providing the quality and percentage of the sulphite stock is kept fairly constant, (which is generally the case) the main cause of variation in the



freeness of the paper machine stock is due to the variation in freeness of the groundwood stock.

Control of the Paper Machine Stock

It has already been stated that the main object of the freeness test is to control the conditions of the stock on the paper machine and that the ideal is to have a uniform test for the freeness of the paper machine stock "as run." The factors influencing this are: — Temperature and consistency of the P. M. S., quality and percentage of sulphite, the quality of the groundwood stock and the amount of white water added on the machines. Of these factors, the quality and percentage of the sulphite and the consistency of the paper machine stock are kept constant. The amount of white water added is also kept reasonably constant, but is made to vary slightly as the quality of the groundwood varies. The two remaining factors, therefore, are the quality of the groundwood and the temperature of the paper machine stock. The latter has seasonal variation and changes slowly, and can, within reasonable limits, be foretold. Providing, therefore, the other factors are kept constant by careful control of the groundwood stock, it should be possible, with practice and experience, to furnish a stock whose freeness would be made to vary, so as to offset the variation in temperature of the paper machine stock, thus giving a uniform test for the freeness of the paper machine stock "as run." From this it is evident that control of the paper machine stock necessitates very careful and accurate control of the groundwood stock.

Control of the Groundwood Stock

From experience it was found that the best freeness for the paper machine stock "as run," was 62 c.c. Then, with the work that had been carried out in freeness testing in the past as a basis to work on, it was found possible to compile a table and curves, showing the relation of the freeness of the ground wood regulator stock to the temperature of the paper machine stock, whose freeness as run was 62 c.c. Therefore, as long as the temperature of the stock on the machines is known, from the curve can be found what the freeness of the groundwood regulator stock should be, to give a freeness of 62 c.c. for the paper machine stock "as run." All that remained was to control the groundwood so as to supply a stock of the required freeness at the regulator.

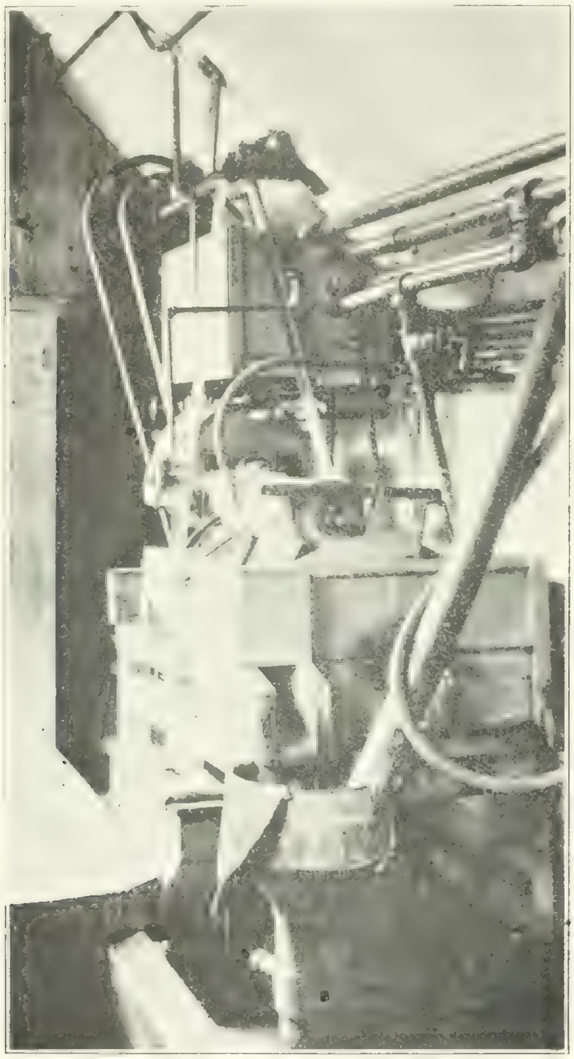


Fig. 2. Mixing box, screen and decker

Here it is necessary to digress somewhat from the subject of freeness and explain a few of the factors that made this so difficult.

One of the principal factors was the location of the grinder room with respect to the rest of the mill. From the grinder room to the beater room, where the regulator is situated, is approximately three-quarters of a mile as the crow flies, and there is a difference in level between these two, of a little over 300 feet. The stock from the grinder room is pumped to the wet room through a two foot stock pipe by means of two 600 h.p. centrifugal pumps. In the wet room the stock is screened, whence it passes to the deckers and thence to a large tank; from this tank the stock is pumped to the consistency regulator and on to the mixing tank where it is mixed with sulphite in the proportions of 3 to 1. It is estimated that the stock takes roughly 30 minutes from the time it leaves the grinder room to the time it enters the deckered stock tank. This tank holds approximately enough stock to feed five paper machines for two hours.

The grinder room is equipped with 49 three-pocket grinders, and is a long L-shaped building. The bull screen, centrifugal pumps and main stock pipe are all situated at the extreme top end of the grinder room. The stock from a grinders does not get well mixed, but may take from just a few minutes to a quarter of an hour or more before it reaches the pumps, according to which end of the building it has come from.

From the foregoing facts it will be seen that the stock may take two to three hours to reach the consistency regulator from the time it is actually made in the grinder room, and since the only reliable test on the groundwood stock, is made on samples taken from the regulator, it was found quite impossible to control the grinding conditions so as to obtain the freeness figures required. It was not, however, until the spring of this year (1922), that an attempt was made to overcome this difficulty, and it was decided to install a laboratory in the grinder room, suitably equipped with a screen and a decker whereby the pulp could be tested on the spot and under similar conditions to what it would be on the consistency regulator.

A small room 10 feet by 25, alongside the block tank, and close to the main stock and white water pipes, was fitted out for the purpose. A small sized screen and decker were built in one corner of the laboratory and driven by a 3 H.P. electric motor from a driving shaft fixed to the slanting wall overhead. (See Fig. 2). The whole outfit is extremely compact and fulfils its purpose admirably. The laboratory was also equipped with a long bench about three feet high and covered with zinc. A copper lined sink with four water taps and suction pumps were supplied, together with an electric oven, balances and the Green freeness tester on a firm vertical stand. In the accompanying diagram the layout of the experimental screen and decker is shown in elevation. The screen is of the centrifugal type and was made in the mill workshop; its casing consists essentially of a piece of 18" cast iron piping, and its heads were cast in brass with two slightly tapering flanges on the inner faces against which the screen plate fits tightly. This screen plate was made from a piece of standard copper screen plating, for screening the best grade of No. 1 groundwood and bent round into a cylinder to make a tight fit on the flanges. The screen was built for simplicity rather than efficiency, but serves its purpose very well and no trouble from blocking is experienced, provided the mixture of stock and white water in the head box is kept sufficiently thin. The decker is just an adaptation of the ordinary standard type and has given no trouble.

A 2-inch pipe was connected directly to the main groundwood stock pipe; this could not be led straight to the head box of the screen owing to the high pressure, approximately 160 lbs. per sq. in., so it was connected to a surge tank, (shown in elevation in the diagram) and thence to the head box of the screen, thus allowing a gravity feed into the head box.

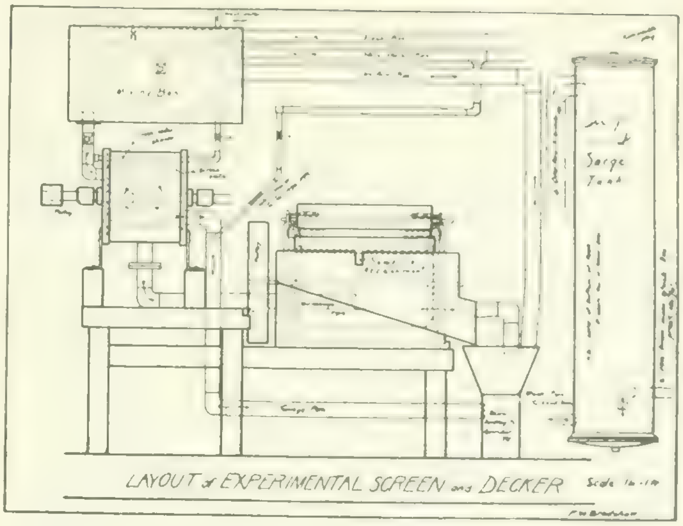
The method of sampling the stock from the decker, was to cut a slot in the front of the decker and by means of a small tin trough (about two inches square and ten inches long), resting in the slot and on the stock board below the doctor blade, a continuous sample could be collected in a bucket suspended below the trough. In this manner a continuous sample was collected each half hour. With a little practice it was found possible to run the outfit to supply a stock of approximately 4% consistency on the decker, the same as the consistency of the stock on the consistency regulator.

The next step was to find the relation of the test on the stock in the grinder room laboratory to that of the test on the groundwood regulator stock as made in the mill laboratory. The two freeness testers were first checked by running duplicate tests on the same stock in the mill laboratory; they were found to check exactly, giving the same test. As soon as the outfit in the grinder room laboratory had been made to run successfully, tests were made on the stock at regular intervals of half an hour and the figures obtained were plotted on a time base. The figures for the freeness of the groundwood regulator stock were plotted on the same sheet with the same base. In this manner the relation between the two tests could easily be determined and it was found that the results obtained in the grinder room laboratory were from 1½ to 3 hours ahead of those obtained in the mill laboratory. As was expected, the tests in the grinder room laboratory showed much greater variation than the tests in the mill, due, no doubt, to the fact that the stock in its passage from the grinder room to the regulator, gets fairly well mixed, especially in the deckered stock tank, where it may remain for as long as two hours. General tendencies in the two curves had to be observed and it was remarkable how the curve of the G. W. Regulator stock followed the tendencies of the grinder room laboratory curve, always about two hours later.

Difficulty was encountered due to the variation in consistency of the thin grinder stock running into the head box of the screen. To counteract this, more or less white water would be added, so as to keep the consistency of the stock on the decker the same. The net result would be that the difference in freeness between the grinder room laboratory test and the G. W. Regulator stock test, allowing for the difference in time, would vary. The fact that such a difference should exist is quite natural, due to the different local conditions in the two cases, but, in order to control the groundwood successfully, it is most essential that this "difference factor" should remain constant. With practice and experience it was found possible to run the screen and the decker, so as to ensure this being the case.

In this manner the freeness of the stock was obtained from three-quarters to one hour after the stock had been made, and it was found possible to actually determine the various grinding conditions that affect the quality of the fibres, namely, the condition of the stones, their speed and the pressure in the hydraulic cylinders. If the majority of stones were dull, giving a slow stock and a number of stones were sharpened, it was found that it would take from half to three-quarters of an hour before a change would appear in the curve. The amount of change would naturally vary according to the number of stones sharpened.

As the pressure in the hydraulic cylinders was kept fairly constant no data could be obtained as to the effect any variation would produce in the figures. However, if a line of grinders were accelerated the resulting stock would be freer, as shown by a rise in the curve.



By recording all grinding conditions on the curve at the time any change is made, any amount of useful data can be obtained, and a much better knowledge of the various factors that influence the quality of the fibres can be determined than was possible previously. Very satisfactory results have already been obtained and the curves for the freeness of the paper machine stock "as run" are now much more uniform than they have ever been before.

BOOK REVIEW

HEATONS ANNUAL — 1923 EDITION. Heatons Annual, Heatons Agency, Toronto, Ont. 568 Pages. Price, $2.50.

The nineteenth edition of Heatons Annual, Commercial Handbook of Canada, has come to hand. Every year each new publication has shown improvements and additions. The new edition is no exception. We notice particularly the Provincial Ready References which have been developed in this book. Here, under each province, is every point of economic interest in adequate paragraphs arranged in strictly alphabetical order. It is possible to turn up at a moment's notice any important point without consulting an index. Nothing of the kind has ever before been produced for Canada, or so far as we know, any other country. Information of this kind is buried in blue books, the very existence of which is not known and which are inaccessible to the ordinary man who is not familiar with the cemetry.

The permanent features of the Annual, including the official directory for Dominion and provincial governments, postal and telegraphic information, money exhange, insurance directory, income tax, transportation and the Canadian customs have all been revised to date.

The Annual also contains up-to-date descriptions of every commercial town in Canada, dealing with industries, census, population and other statistics invaluable in tables given at the end.

Heatons Annual is known as the standard authority on the Canadian Customs Tariff. It is in daily use by manufacturing and other business firms throughout Canada and the United States. No commendation from us is necessary. As a time saver its utility is well established.

Development of Paper Board Manufacturing Industry

An interesting account of the origin and development of the paper board industry was given by Lovelock Holm at a meeting recently of the Men's League in Norwich, Conn. He remarked of the industry as developed in America that it had no counterpart in any other country in the world: for it was distinctly an American enterprise, having its inception in the first half of the nineteenth century with the invention of the Yankee or cylinder papermaking machine. He said:

Prior to 1817, paper of all kinds were made in America by hand. The small quantity of paper board required for book binding, pasteboard boxes, etc., was made by pressing together hand-made sheets of paper. The term pasteboard was derived from this process and as been used ever since by those unfamiliar with the trade when referring to all grades of paper board business in America has been coincidental with that of the cylinder papermaking machine, especially with the multi-cylinder machine first built in the seventies of the last century. The first practical paper machine was used in the Gilpin mill in Wilmington, Del., in 1817, to make writing, book and newsprint,

A cylinder machine was invented by Dickinson in England in 1809 and the Fourdrinier machine had been invented by Robert in France in 1799, but neither of those machines for papermaking were known in America prior to 1825, as evidenced by the granting of basic patents to Gilpin for his practical cylinder machine in 1817. There is no record indicating that the Dickinson cylinder machine was ever used successfully in Europe; but great progress was made in developing the Fourdrinier machine.

To the present day the European paper and paper board makers have used the latter type of machines and they have been preferred and adopted in America for most grades of paper excepting paper board. The first Fourdrinier machine was imported in 1827 and installed in New York State; and the first paper machine of the Fourdrinier type was manufactured in America by Smith and Winchester of South Windham, Conn., in 1829, and installed in the Hubbard mill in Norwich. Available records indicate that the single cylinder paper machine was in practical use in America for all grades of machine made papers at least ten years before the Fourdrinier type was introduced here. These first cylinder machines were all wet machines, the paper being loft dried or sun dried and finished after leaving the machine. Presses, dryers and calendars were soon added and used for finishing the paper on the machine, that is, the light weight papers.

There also was developed a cylinder wet machine for producing the heavier weight paper products or paper board. George A. Shyrock, who operated a mill in Chambersburg, Pa., from 1828 to 1831, was one of the first to use paper pulp made from straw and is credited with being the first to manufacture paper board from straw, although in the early thirties the manufacture of light weight straw paper was a prominent industry in Columbia County, N. Y.

During the period from 1830 to 1870 the paper board business grew slowly and mills were built west of the Allegheny Mountains and in Ohio, Indiana and Illinois, where straw was plentiful and cheap. These mills were equipped with cylinder wet machines and there were many improvements in the method of cooking or subduing the raw material; as well as in drying and calendering. With the boom in business following the Civil War, there was a decided increase in the demand for paper boxes and that business soon required an increased supply of paper board. The machines making light weight papers being equipped with press dryers and calenders, the paper was finished on the machine. It required years of experimenting by many manufacturers of both paper board and paper machinery to develop the multi-cylinder paper board machine.

By increasing the number of cylinders a lighter or thinner paper was made in each cylinder to produce a given thickness of board. On the early multi-cylinder machines with three or four cylinders it was believed that only free paper pulp such as straw could be used, and until the nineties there were very few grades of paper board made on this kind of machine except straw board. It was soon found, however, that other than straw board waste could be used, especially on machines having five, six and seven cylinders. On these a great variety of boards were produced from all kinds of old papers and of wood pulp, which by that time had come into general use in the manufacture of most all grades of paper.

The great advantage of this kind of machine is the ability to make on it a sheet of paper board composed of as many different kinds of papermaking pulp as there are cylinders on the machine, because each cylinder and vat is a separate paper forming unit on which can be formed a paper film composed of any paper pulp that is conducted on the vat.

Forty Years of the Paper Industry in the United States, as Told by the Census

(Compiled by the American Paper & Pulp Association)

	1919	1914	1909	1899	1889	1879
No. of Establishments....	729	718	777	763	649	742
Persons engaged	124.935	95,516	81,473	53,012	(1)	(1)
Primary Horsepower . .	1,851,014	1,621,154	1,304,265	762.118	297,724	(1)
Capital	905,794,583	534,624,600	409,348,505	167.507.713	89,829,548	48,139,652
Salaries and wages	165.643,386	66,163,815	50.314,643	25,247,337	14,975,485	8,970,133
Paid for contract work . .	487,240	539,626	527,915	320.846	(1)	(1)
Rent and taxes	34,911.259	4,493,053	2,637,540 (2)	1,336,215	(1)	(1)
Cost of materials	467.482,637	213,181,286	165,442,341	70,530.236	44,228,480	34,862,132
Value of products	788,059,377	332,147,175	267.656.964	127,326,162	78.937,184	57,366.860
Value added by manufacture	320.576.740	118.965.165	102,214,623	56,795,926	34.708,704	22,504,728

(1) Figures not available.

(2) Exclusive of Internal Revenue.

Men Are Where You Find Them

The Problem of Reassembling the Skilled Labor Force

By K. M. COOLBAUGH
In "Industrial Management"

"Where and how are we going to get the right men?"

This self-searching question employment managers and production executives have been asking of themselves and each other during these past few months.

A daily contact with employment managers and their representatives has convinced me that their biggest problem during the revival of construction and industry is to convince the production executives in their plants of the magnitude and complexity of the job which they now have on their hands. With industry on the upgrade, production departments must think more in terms of men, and Employment departments in terms of production and its myriad problems.

A striking example of such an interchange of view point came to my attention in the ordinary run of business just the other day:

The employment department of one of our old customers, a large car building plant, had had its back to the wall for months endeavoring to solve the problem of the recruiting of car builders, truck repairmen, and general freight and passenger car mechanics. The employment manager had spent days and nights scouring not only his own city, but the surrounding country within a radius of nearly two hundred miles in a vain attempt to obtain men sufficiently skilled to hit the ball when they passed through his department and were sent out into the shops. The hundreds of dollars spent in railroad fare, hotel bills and advertising, to say nothing of the financial equivalent of his time had brought almost negligible results. Competent mechanics were simply not to be obtained, at least not in time for the building schedule of the production department.

Instead of trying to carry the bag himself or pass the buck, he laid the labor situation, as he knew it to exist, before the executive officials of his company. He did it without kid gloves or camouflage, and then, going one step further than many employment managers, he asked the privilege of taking with him on a recruiting mission the General Shop Superintendent. This request was granted, and after advertising widely in the newspapers for the class of mechanics desired, the employment manager turned every applicant over to the shop superintendent for interview. Before the superintendent stepped into the employment manager's boots he had asked himself as well as the employment manager this question: "What has become of those skilled mechanics we had in 1920 before the crash came?"

The two hours he spent in interviewing answered the question more intelligently than any survey or professional advice that ever came out of an employment conference. He found that the most experienced car builder who came to him as a result of his advertisement had for the past two years been working as a hostler on a large private estate. He had taken this job, after being laid off in the fall of 1920, because it provided board and lodging for himself and wife at a time when rentals were prohibitive to the average man out of a job.

Another applicant had for a year and a half been running a milk route, which he had taken when his job in the railroad car shop had blown up. Two others were in business for themselves: one as a huckster and another as proprietor of a hole in the wall cigar store.

After interviewing about ten men of the fifty or more who answered the advertisement, the superintendent realized this fact, namely; competent mechanics willing or able to work at the rate paid by his company were not to be obtained within a day, a week, possibly not for months. There was but one solution, and that was to hire men who might be classed as the "helper" type, men with some car building or wood-working experience, who were of the substantial "I-want-to-make-good" type. This he proceeded to do without wasting either his time or that of the applicants.

The condition which prevails in this particular field is a true cross-section of the labor situation in substantially all lines of industry and construction. When the industrial shake-down paralyzed the country in 1920, men from every walk of life took whatever positions or jobs they could obtain in or out of their chosen trades or professions.

In the fall of 1920 fifteen stone cutters, who had for eight years worked for the same contractor, were as a matter of necessity on the part of the employer, paid off and regretfully told that they must look elsewhere for employment; at least until spring, when business in their particular line might improve. After seeking work in their own trades for several weeks, two of them obtained employment with a large street and highway contractor, cutting Belgian blocks on a piece work basis. They took the work primarily as a make-sift. After they had become accustomed to the work, a matter of about two weeks, they were averaging more than they had previously made on a year-round basis in their trades as stone cutters. The result was that the moment these men drew their first pay, twelve more of the fifteen immediately took similar work with the same company.

For the past six months these men would have drawn more money than they are now making if they had returned to their old trade, but they realized the advantage of an under cover, year-round job. Possibly they may in time be drawn back to their old trade, where today there is both an unprecedented demand and shortage of competent men.

This is not an isolated case of round pegs in square holes. It is true of a score more of other trades and industries. Hundreds of thousands, in fact, millions of skilled industrial mechanics are today working outside of their chosen trades, in some cases earning wages greatly in excess of their old employment, and too often in work, as in the case of these stone cutters, requiring subsantially no back-ground of experience or training.

Within a block of my home there is a city firehouse. Out of its personnel of twenty men, eight are men who within the past two years entered the fire fighting service. Six of these men could today obtain jobs paying fifty to five hundred percent more than they are receiving in their present occupation. In practically every case they took their present jobs as a matter of necessity. One of them is a journeyman machinist; another, a cabinet maker who incidentally can paint, do plumbing and upholstering; another is a first class pipe fitter, while still another draws down about $5.00 per day, although he holds a union card as a first class plasterer and bricklayer at a period when he could make four to five times that amount in his trade.

At every turn of the corner we find the same condition. A moulder working as a watchman, a cabinetmaker driving a truck or working as a carpenter on a housing operation, a graduate chemist bossing a concrete gang on construction. It is a man-size job the employment department — and industry as a whole — must face. Those who are keenly concerned with turnover charts, cyclical depressions and dilution of labor have many sleepless nights awaiting them.

The big job before the 1923 employment manager and the plant back of him will be to pull these round pegs from square holes and place them in the round holes where they belong. It will not be done in a day, a month or possibly in a decade. The condition is one of the inevitable aftermaths of the industrial upheaval.

The turnover during the war and the period for two years subsequent gave many of our Industrial Relations experts much concern; but the next two years, as I see them, must inevitably hold an equal, if not greater percentage of turnover and readjustment. It is not a problem which any one department can possibly solve. It is a joint employment-production problem, a plant problem. Once the production department has become familiar with labor conditions as they exist today, the employment or labor problem in that plant will be on its way to solution.

Whether we wish it or not, one of the first steps which industry as a whole must take will be a modifying of employment specifications. There must be less concern on the part of employment men and the foremen in the plant back of them with what men have done in the past and what they are doing today. As an employment manager of years' standing remarked to me the other day after an unsuccessful endeavor to employ the quality and quantity of men he wished: "I have passed the stage where I accept at par the specifications of foremen and plant executives. Every day I have the fact driven home to me that we must revise our standards in employing men. In fact, I sometimes wonder if we have not made those standards too high; I know we have, for present conditions. I know our age limit is too low; we are raising that. We are not going to be so particular about physical examinations, except in so far as they affect the general health of all employees. Where a man looks anywhere near like an even bet in filling a job or looks like a fair bet of working up to it within a few months, I am going to take a chance on him. This is not a matter of sentiment with me, because it has taken me years to build up the standards we used to have in our employment work. It is simply a cold-blooded proposition looked at not only from my own angle, but from that of the manufacturing department."

The war produced millions of specialists...one-machine men...generally speaking it produced no apprentices worth the name; certainly it produced none in the construction trades.

With thousands of our most desirable foreign-born labor gone back to Europe as the result of the depression two years ago; with many thousands more seeking and taking, where available, jobs on construction work in Europe, South America and the Orient; with motor transportation becoming every year a greater factor in our industrial life, demanding an ever-increasing number of mechanics, drivers and chauffeurs; with tens of thousands more entering the unexplored field of radio, where are the men to come from?

There is but one answer; we must take men as we find them. Industry must try experiments which it has never tried before; it must not only draw men back into the trades and professions for which they are best fitted, but it must develop mechanics and artisans by the apprentice system. It must also modify at least for the present its employment specifications.

Perhaps the greatest demand, at least at present writing, is for common labor, particularly industrial labor. I have heard it stated in entire good faith on scores of occasions, by employment managers and shop foremen, that they were unable to use colored men in their plants. It is said repeatedly that white and colored men will not work side by side. I have no desire to enter into a discussion on the so-called race problem. Experience has shown, however, that often when white labor cannot be obtained, colored labor is available. I do know that for the last decade the largest industrial organization in America in one of its plants to which we have been referring men, has used white and colored men, not alone under the same roof, but in the same manufacturing operations. This is true not only in the case of common labor but in some of the skilled trades; a colored holder-on or a heater boy may be found with a white riveter working in the same gang. And usually the riveter picks his own gang.

A fellow employment manager asked an official of this company how they accomplished it, how it was done. The official replied:

"How? I am sure I don't know. It was simply done and it has been done ever since I have been with the company, over ten years. We never took the trouble to consider it a problem, and like most things the corporation does, it became an established policy without the aid of publicity inside or outside the plant. If we had talked about it, possibly it would have assumed the dignity of a problem."

What this company has practiced for ten years others might at least give thought to attempting.

Some years ago I prospected for gold in Colorado. For six months we tried our luck wherever a rule of thumb or book told the engineers of the party we might strike gold. And then one day we came across an old prospector miles out of the beaten path panning out gold from a gulch, where reason, experience and the text books said it simply couldn't be done. We asked the old prospector how he happened to make the strike; what had taken him to a point the mining engineers would never have considered. I shall always remember his answer, delivered in a slow, mater-of-fact monotone:

"Gold, son, it where you find it."

That is the situation today with mechanics, as well as with men; for, like gold, they are where you find them.

Proceedings of the Technical Section

DISCUSSION OF PAPERS

(Continued from last issue)

THE PROPERTIES OF WOOD IN PAPER MAKING

MR. BRYANT: Gentlemen, we are honored in having on our Program a paper by Dr. Bjarne Johnsen of the Hammermill Paper Company, Erie, Pa. Dr. Johnsen is an old friend of ours; he started his career in Canada, he has since gone to the United States but he comes back to visit us quite frequently and we are always glad to see him. It gives me a great deal of pleasure to call on Dr. Johnsen.

DR. JOHNSEN: When your Secretary asked me to introduce a discussion of the chemical and physical properties of pulpwood, I was just about to build a laboratory for the testing of pulpwood. Unfortunately, that work was delayed, the laboratory is just being built now and I do not have as many facts about wood as I would like to have. However, what I have in this paper will serve as a good introduction to the general discussion of this problem.

(The paper on the Properties of Wood in Paper Making by Dr. Bjarne Johnsen was printed in the "Pulp and Paper Magaine" for Feb. 1, 1923.)

Interpolation page 1 after the words 'solid wood in the cord" (Page numbers refer to pages in reprint of Dr. Johnsen's paper.)

MR. STEARNS of the Abitibi Pulp & Paper Company has done wonderful work on wood measurement and I am only sorry that he has not as yet published the very valuable data that he has. I hope he will do so and that this publication will form one of the Technical Section's papers for next year.

(Go ahead with paper "According to Stearns.")

Interpolation after table re cellulose right hand top page 2: You will see that this table shows a difference of about six per cent in the cellulose content of Black and White spruce. I do not know if that is generally the case; it was in this particular case. I do not suppose that black spruce in many cases would have as much cellulose as white spruce. The table shows the great variation there will be even in the same location.

Interpolation after table headed "Spcific Gravity", page 2: This is a very interesting table. You will see that there is a difference in the cellulose content of the Swedish spruce and the spruce that we tested here in Canada. It does not mean that the Swedish spruce is so much better; it only means that they use a different method to determine the cellulose content which gives that higher value. I believe that if they had used the same method they would have found very nearly the same cellulose content in the Swedish spruce as in the Canadian spruce although there may possibly be some slightly higher cellulose content in the Swedish wood due to its slower growth.

Interpolation middle of paragraph headed "Decay" page 2, and after the words "30 per cent": Mr. Low investigated various kinds of fungi in the wood in our yard. Generally we know when wood is decayed and we also know that usually the presence of fungi decreases the cellulose content. But we ought to have a chemical analysis by means of which we can determine how much yield we may expect with the various degrees of decay. We found that all the fungi we have in our yard brought down the cellulose of the wood with the exception of one fungus which apparently increased the cellulose content. It does not build up the cellulose but it breaks down the lignin.

* * *

Discussion of Paper

MR. BRYANT: I think that Dr. Johnsen is to be complimented on the excellence of his paper and that we are to be congratulated on having heard him. The paper contains so much of importance that it is almost impossible to know where to begin the discussion although I am sure we all have things that we want to ask Dr. Johnsen and also things that we want to talk about in connection with what he has said.

One of the things that interested me was the fact that the data in this paper point to the fallacy of buying our wood on the basis upon which we are buying it at the present time; that is the cord basis or the board feet basis. We used to buy peanuts by the quart and bananas by the dozen but we have found it more profitable to change to the weight basis in buying these commodities and now we buy them by the pound. How much more important is it that we should buy our wood which is subject to such great variations and the cost of which runs into such enormous figures, on the basis of weight rather than of volume?

I was very much interested in the statement made by Dr. Johnsen at the bottom of page 3 of his paper which is as follows:

"The sound wood yielded a pulp with only 0.6 per cent. screenings and requiring only 17 per cent. bleach while the pulp resulting from the rotten wood had 6.6 per cent. screenings and required over 30 per cent bleach."

This has been our experience with rotten wood. Often we are running along very nicely with a fairly constant percentage of screenings when suddenly we strike a bunch of rotten wood in the pile and the screenings immediately jump to a high point. This is one of the great disadvantages of rotten wood. Then, in the next column, Dr. Johnsen says:

"According to Bates (11) there is no reduction in the strength of the pulp but his tests were made on unbeaten pulp and the difference would hardly show up at this stage."

This is mighty important to those of us who make newsprint. Sometimes we have to use rotten wood. We do not beat our pulp and apparently, according to Dr. Bates' experiment, the strength is not materially altered by the fact that we are using rotten wood. It may be that we are getting a lot more dirt but that is another problem. However, it does make a big difference to the manufacturers of the higher grades of paper whether they use pulp that has been produced from rotten wood or sound wood as they develop the strength of pulp by beating. In the same paragraph Dr. Johnsen says:

"However, the maximum strength of the pulp is reached at an earlier stage in the beating process after which point the strength decreases rapidly."

Is the maximum strength, in the case of pulp from decayed wood, as high as it would be from sound wood?

DR. JOHNSEN: You may get just as high a strength with decayed wood at a certain stage of the beating but that strength is not what I would call the real strength of the fibre. It is due to the hydration of the fibre which results in parchmentizing of the sheet. You get high strength but you get a sheet that you do not want. I would like to give one experience we had a couple of weeks ago at our plant. We had some old peeled wood in our yard which had been stored for a couple of years. It was not very good when we got it and it was not any better when we used it. It was interesting to note the effect of the different methods of storing. We are storing our wood in ranked piles so that the different piles come together fan-shaped. It means that at one point of the fan you will not have any circulation of air while you may have some at the other end of the fan. We found that the wood at the top of the fan was badly decayed while the wood in the other part of the pile, which had more circulation, was fairly good. Our experience with that wood in the mill was that immediately we started to use it the slowness of our pulp went up. This shows that the cellulose had been attacked and that the pulp did not stand as much beating. Slowness in a case like that is important because it warns the paper mill of the fact of the slowness of the pulp and they will take care in their beating process; they will not beat pulp of this character so hard.

MR. BRYANT: There is one more question I would like to ask Dr. Johnsen. What do you consider a desirable moisture content for cooking? You spoke of dry wood and green wood.

DR. JOHNSEN: I should say from thirty to thirty-five per cent.

MR. BRYANT: Surely, Gentlemen, the meeting is not done with this discussion? I know you all have a great deal to say on this subject and if you do not discuss it now I am going to call on you.

DR. BATES: Mr. Chairman and Gentlemen, I would like to take some indirect credit for this paper. In 1915 I persuaded Dr. Johnsen to come from Europe to Canada for the purpose of studying the chemistry of wood and I am glad to say that although he has left the forest border he still enthuses over the subject of the chemistry of wood. Now that he is building a special laboratory for the purpose of pursuing his investigations in this particular field, I believe this marks the down of a new era in the science of paper making because we are studying the most important of our raw materials. If we give the same attention to wood that we give to coal, salt cake and other things, we shall have better results. Of all the raw materials used in the mill wood is the most difficult to analyze and the process changes are most intricate to follow but the prospects for improvement in efficiency are great. I see that Dr. Johnsen has discussed the question of decay in pulpwood to a considerable extent. The afternoon will be devoted to this subject in the Woodlands Section meeting and I think we can continue this discussion there. There is one point, however, that I would like to mention and that is the question of the greater absorbency of rotten woods. I would like to ask Dr. Johnsen: What was the original moisture content of the decayed wood, because that might have a bearing on the rate of penetration in the cooking.

DR. JOHNSEN: First of all, I wish to thank Dr. Bates for bringing me across the ocean. In regard to the moisture content of the wood, it is known that the penetration is affected by the moisture content so we arranged to have wood of the same moisture content, or about 50 per cent.

MR. H. N. LEE: That was with the exception of very badly decayed wood. We had a very much higher moisture content to start with. I think there was fully 75 per cent. of moisture content at the start.

DR. JOHNSEN: As you know, penetration is not influenced very much when the moisture content is high. Above 50 or 75 per cent. the penetration is not influenced very much by moisture content.

DR. BATES: I think it is probably the experience of those who have examined pulpwood that moisture, under ordinary conditions, is usually higher in wood coming from the river or from a block pile. In our tests we found that rotten wood was about 10 per cent. higher in moisture content than the average wood and that the yield by weight was practically the same although the screenings were rather higher. The results seemed to show that the higher moisture content of the rotten wood tended to protect the decayed portions from over cooking thereby maintaining the high weight yield but to some extent increasing the screenings. What do you think would be the relation of that result to your determination of the very much higher absorbency of acid?

DR. JOHNSEN: I do not really know how I should answer that question. You mean that the wood would be protected on account of the higher moisture content?

DR. BATES: That was our impression.

DR. JOHNSEN: It would mean a dilution of the acid.

DR. BATES: You would get a higher penetration of the acid but you might have to overcook the decayed portion. In other words, you intimate that the decayed portion is not over cooked even though it has more absorbency.

DR. JOHNSEN: I have talked over the matter of the properties of wood in paper making with several friends and especially the question of the measurement of wood, a subject which Mr. Thorne has been discussing with his woodsmen and others for years. I have considered this only from the point of view of the value of the cord based on the density and the size of the log. Mr. Thorne has brought up the very important relationship of board foot measure to the purchase of pulpwood and he has been kind enough to present this chart (see chart) showing how the diameter of the logs influences the solid wood per cord based on board foot measure. This is the first time that I have seen this chart so that I am not prepared to discuss it. If you will permit me I would like to call on Mr. Thorne to explain it.

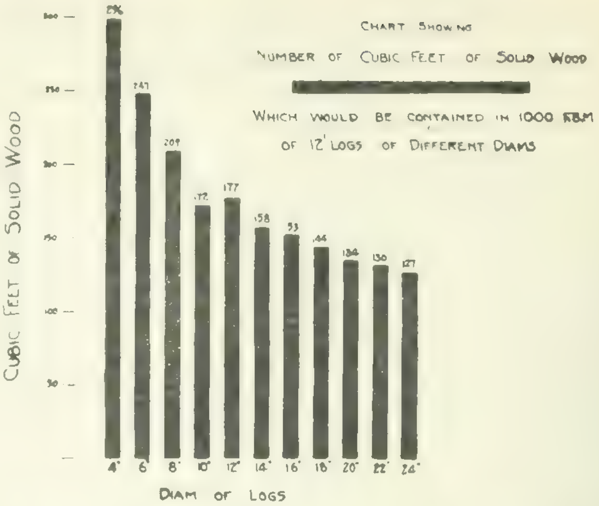
MR. BRYANT: We will be delighted to hear from Mr. Thorne.

Wood Measurement

MR. THORNE: In the past we bought pulpwood by the cord or by board feet measure without taking much into consideration the correctness of the measurements and the value of the wood as raw material for pulp and paper making.

We have heard from Dr. Johnsen that the value of wood for pulp making can vary as much as 20 per cent.

Sometime ago I wanted to find out the correctness of measuring wood by the cord measure and appointed a technical man to represent the mill and a woodsman to represent the woods department to find out the number of cubic feet of solid wood contained in one cord of wood. On going over the results of this measurement I found that the variation of solid wood contained in a cord of piled 4-ft. wood was a high as 20 per cent. This indicates that the cord measure is not exact enough.



This chart shows the number of cubic feet of solid wood which would be received in 1,000 board feet measure of logs of different diameters. From this it will be noticed that:

1000 ft. board measure of 4″ logs contains 296 cu. ft. solid wood
1000 ft. board measure of 6″ logs contains 247 cu. ft. solid wood
1000 ft. board measure of 8″ logs contains 209 cu. ft. solid wood
1000 ft. board measure of 10″ logs contains 172 cu. ft. solid wood
1000 ft. board measure of 12″ logs contains 177 cu. ft. solid wood
1000 ft. board measure of 14″ logs contains 158 cu. ft. solid wood
1000 ft. board measure of 16″ logs contains 153 cu. ft. solid wood
1000 ft. board measure of 18″ logs contains 144 cu. ft. solid wood
1000 ft. board measure of 20″ logs contains 134 cu. ft. solid wood
1000 ft. board measure of 22″ logs contains 130 cu. ft. solid wood
1000 ft. board measure of 24″ logs contains 127 cu. ft. solid wood

This means that if you buy 1000 feet board measure of 4″ logs you will get pretty nearly 300 cubic feet of solid wood but that the cubic contents of solid wood decreases with the larger diameter logs.

In 1000 feet board measure of 4″ logs you get more than twice as much solid wood as you get in 1000 feet board measure of 24″ diameter logs, which means that the board feet measure is of no value when measuring wood for pulp making. The board feet measure has been installed in the Province of Quebec for the purpose of measuring wood in connection with the payment of Government stumpage on saw logs.

This means to say that today we have no satisfactory method for measuring wood for pulp and paper making, and I therefore suggest that the Technical Section appoint a committee to take up the matter and endeavour to throw as much light on the question as possible so that by next year's meeting we may expect to get a report and suggestions on a better method for measuring wood.

(The issue is further complicated in the matter of pulpwood, because a cord never contains sticks of uniform diameter, not even a uniform combination of diameters.—Ed.)

MR. BRYANT: Gentlemen, I see you are putting it up to me. I will call upon Mr. Rue of the United States Forests Products Laboratory.

MR. RUE: The effect of decay and seasoning on the amount of pulp obtainable from the digester is a decidedly interesting question. My attention was called a little while ago to a mill experience which bears out the results obtained by Dr. Johnsen. They were charting the record of the yield per digester. The wood was being shipped in from one locality and, being from the same source, it was supposed to be of the same quality. Suddenly the yield per digester took a drop. The man who was shipping the wood claimed that it was all the same but on investigation he found that there was some from a different part of the storage yard and that it had been in storage for a considerable time. Apparently it was due partly to drying out and partly to decay.

Our experience as a result of tests at the Laboratory with regard to the effect of decay on yield would lead to some modification of the result found by Dr. Johnsen. We have found that up to a certain limit apparently decay affects the yield per hundred pounds of wood very slightly but that beyond that limit if there is a fairly large degree of decay the yield takes a very decided drop. Just why that is I do not know, but possibly the answer may be found by studying the decomposition of the cellulose during the cooking process. As you know, with about 60 pounds of cellulose per 100 pounds of wood, you only get about 45 pounds of cellulose in the pulp. The change in the properties of the cellulose under the action of decay organism seems to be something in the nature of the change that takes place during the sulphite cooking. Perhaps the decaying action is to slowly decrease that portion of the cellulose which goes into solution in the cooking process. That might possibly account for the fact that the yields are not very largely decreased during the early stages of the process.

In regard to the effect of moisture on the yield and quality of the pulp, I have been wondering whether the results that Dr. Johnsen has been telling us about were based upon the use of the same amount of chemical per 100 pounds of wood, in which case the increased amount of moisture in the wood would give a dilution in cooking, or whether allowance was made for moisture so that the ultimate degree of dilution would be the same whether the wood was wet or dry. At the Laboratory we studied the effect of moisture and we found that by using the same quantity of chemical per unit of wood — that is using the ordinary acid solution — and allowing the increased moisture in the wood to dilute it so that we always cooked with the same ultimate degree of dilution, or strength, the quality and yield of the pulp were better when we used wet wood than when we used dry wood. We made a test by taking kiln dried wood and wood saturated with boiling water. The difference is apparently due to the more uniform penetration of wet wood, such as pitch free pine than of dry wood. I would be very glad to know from Dr. Johnsen what allowance was made for dilution and whether the use of wet wood would give elasticity to the action of the acid.

DR. JOHNSEN: I do not account for the difference in yield by the dilution of the acid. Within the limits that we are interested in, so far as moisture content goes, I do not think that the dilution of the acid amounts to very much. It might in the case of your experiment, Dr. Rue, where you compare kiln dried wood with wood of a very high moisture content. There, of course, you will find a difference and you will have to take care of that factor but I do not think that in mill experience a difference of ten or fifteen per cent. in moisture content amounts to very much as far as dilution goes. I believe the temperature during the cooking time regulates the strength of the acid more than anything else because you have a certain strength of acid in the solution at a certain temperature and at a certain pressure. It is in the beginning of the cooking that I believe the strength of the acid is of importance. In regard to the cellulose content of decayed wood, I look upon the action of fungi in the same way as I look upon the action of chemicals on cellulose. Cellulose is broken down by hydrolysis, or by the action of acids. Bacteria and fungi have the same effect as the acid: in fact, it has been possible by means of bacteria to break down the cellulose and isolate products which it was not possible to isolate by chemical reagents. The reducing quality that you get is due to the effect of the fungi. The Forest Products Laboratory at Madison has done a great deal of work in that line, comparing the reducing quality of the wood to the cellulose content. The result shows that the cellulose content is decreased as the reducing quality of the wood increases. However, that is not always the case because in the case of the fungus **Trametes pini Brot.** the result is just the opposite.

MR. BRYANT: I will ask Mr. Shipman to say a word.

MR. SHIPMAN: I do not know that I have anything to say on this subject. There is a gentleman in our company who has given it a good deal of study and who knows more about it than I do. I am only a listener this morning and I have found the paper and the discussion very interesting.

MR. BRYANT: Mr. Durgin, will you give us the benefit of your views?

MR. DURGIN: I do not know that I have anything to say in this connection, but I would like to ask Dr. Johnsen if he noticed any effect from moulds. There are slimy moulds and it would be interesting to know what their effect is as compared with the effect of fungi.

DR. JOHNSEN: I will refer that question to Mr. Lee.

MR. LEE: We have nothing on that at all.

MR. BRYANT: Mr. Neilson, cannot you give us something on this subject?

MR. M. NEILSON: I am afraid we do not know very much more than what has already been said on this subject. The fact is that this problem has not been given the attention that it deserves. At our mill we are having quite a little trouble with rotten wood but we do not really know how to attack it. Two years ago we made a test of grinding decayed wood along lines similar to those described by Dr. Bates. I do not remember the figures but I think we obtained a yield, compared with sound wood, of about 56 or 58 per cent. We weighed the wood and the pressed pulp and determined the moisture in the lap pulp and the yield was, I think, 56 or 58 per cent. of the yield obtained from sound wood. We did not at that time have any provision for testing the pulp as to freeness so we really do not know how it compared with pulp made from sound wood. Thrown upon the screen it looked very good although it was of very poor color; it was very dark. We mixed this pulp with our ordinary grade of sulphite and ran it on one machine but we could not keep the machine running for any length of time; in fact we could not get our machines to run long enough to use up the decayed ground wood; we had to give it up. It may be due to the fact that our wood was very much worse than the wood used at the Price Bros. & Company's mill. Recently we have actually been using in the mill wood stored for two years and it is of very poor quality. It so happens that the wood is stored in a large pile where the possibility of admitting air is practically nil. We have certainly found that the use of decayed wood affects the production of paper both as to quality and quantity. We have had great trouble with excessive breaks on the machines.

MR. BRYANT: We have not heard from Price Bros. yet. I would ask Mr. Hawkings to say a few words.

MR. HAWKINGS: This seems to be developing into a sort of poker game; everybody seems to be passing the buck. If I may say so, this discussion is rapidly developing into the sort of discussion that should take place on the paper to be read before the Woodlands Section this afternoon and, along that line, I do not see why it would not be possible for the Technical Section to join with the Woodlands Section for the discussion of this problem. It seems to me that it is as interesting to the Technical Section as to the Woodlands Section. We could all obtain a great deal of benefit from a free discussion of the use of rotten wood. As far as we can tell, our experience seems to bear out the statement of Dr. Rue in regard to the dilution of the acid by the moisture present in wood. I know we have had great difficulty in cooking wood with a high percentage of moisture. We have been up against that proposition very greatly lately. We are overcoming that by a special type of cooking, for which a patent has been obtained, or at least applied for, by our sulphite superintendent, Mr. L. B. Decker and we hope in a short time to be able to publish some data on that matter.

MR. BRYANT: It is very unfortunate that we did not make some arrangement with the Woodlands Section to have a joint meeting on this problem. However, our program had been drawn up so far in advance that it was impossible to arrange it. We have quite a busy afternoon ahead of us, and I understand that Dr. Bates paper is to come up this afternoon also. I am afraid it will be impossible for many of us to get to the meeting of the Woodlands Section. I have been looking over the audience for some time to find Mr. MacNaughton.

MR. MacNAUGHTON: Mr. Chairman and Gentlemen, the discussion has covered considerable ground and, to a certain extent, has gone rather far afield from Dr. Johnsen's paper, so that it may not be out of place if I follow the example which has been set. I was impressed with the statement made by Mr. Thorne and also with the part of Dr. Johnsen's paper dealing with the measurement of wood. I noticed that for a considerable portion of the paper the basis is the cord. I agree with Mr. Thorne that as far as pulp production is concerned the cord measurement should not be used at all. It may be necessary, and it probably will for a good many years, to buy wood on the cord basis because it is difficult to change. It is true that in a considerable part of the pulpwood producing area of Canada, the purchase and production of pulpwood is not on the cord basis at all although the "cord" is still used as a term, but rather on the basis of the solid cubic measurement being especially true where the pulpwood is produced in longer lengths than four feet as most of it is. It appears to me that in the purchase or production of pulpwood, as no two timber areas are exactly alike, any difference in the stand and character of the timber can be taken care of in the purchase price, but when the wood gets to the mill to be turned into pulp the solid cubic measurement basis will not be very satisfactory.

The only satisfactory basis is the weight basis and I am impressed with the value of weightometers to weight the wood with sampling to determine the moisture content in order to preserve the chemical balance. In this way you can regulate the dilution of the acid along the lines indicated by Dr. Rue. If the mill is getting wood by rail and also by river, varying in the percentage of moisture, the difference can be taken care of in the concentration of the acid. I am inclined to disagree with Dr. Johnsen in the statement that this difference in moisture is of no particular concern. We know that wood which is properly stored for one or two years will drop in moisture to perhaps 28 or 29 per cent whereas green wood will carry from 50 to 52 per cent which means quite a considerable dilution of the liquor.

DR. JOHNSEN: I am very glad that Mr. MacNaughton said that he did not agree with me on the point of the affect of moisture content. I want to say that I do not agree with myself. I wish to correct what I said a moment ago. My statement was rather too broad. The value of discussion is that it gives you an opportunity of seeing other people's viewpoint and I am glad to say that I see Dr. Rue's and Mr. MacNaughton's viewpoint. I intended to say that the small variation of moisture that we have in some of the mills does not affect the cooking process very much because there will be so much variation in the individual chips that it will be difficult in practice to establish the exact moisture content. Thorbjornson said in a paper some time ago that by reducing the moisture content of the chips from 40 to 20 per cent you got 9½ per cent less chips in the digester which means that with dry wood you get more chemical per pound of wood than you do if you have very wet chips which, of course, would influence the process.

MR. MASON: We all seem to be pretty well acquainted with woods affected by fungi and by different degrees of rot. I have been wondering if anybody has made any tests to determine how we can get the greatest value out of that wood — whether by the chemical process or by the mechanical process.

MR. BRYANT: Can anyone give us some light on that question? Mr. Neilson's experience did not seem to favor the groundwood process, did it Mr. Neilson?

MR. NEILSON: It perhaps depends on the relative quantity of decayed wood to sound wood. Our experience has been as I have stated it but the experience might be very different in another mill. Our experience has been that you can put more rotten wood in the sulphite mill than in the groundwood mill. Our general practice has been during the past year to put the bulk of the decayed wood from the pile in the sulphite mill. It may be that the experience of other mills would reverse the conclusion that we have arrived at in regard to this matter.

MR. BRYANT: Do you find, Mr. Neilson, that there is any very great increase in the screenings when you are using rotten wood in the sulphite process?

MR. NEILSON: No. I do not think we can say that. I do not see why there should be an increase in the screenings from decayed wood. Screenings, as far as the sulphite process is concerned, are made up of undigested wood and I do not see why there should be an increase in the amount of these screenings unless it might be due to the fact that knots in the wood would not be attacked by decay. Otherwise, I do not see why there should be any increase in the screenings. It is very difficult to compare the results from a theoretical point of view because there are so many factors entering into the question. We have found that when we use more sound wood in the groundwood mill the yield per ton at the grinder increases. We found that quite recently. For instance, in the three pocket grinders the yield was running along around six tons, and when we cut out a percentage of the rotten wood it went up to seven and a half tons. With regard to the question as to screenings in the sulphite pulp, it is very hard to say because we are using a large percentage of jack pine and do not know whether screenings are increased when using decayed wood. I believe there is a possibility of an increase in the amount of screenings when you use decayed wood for several reasons. It all depends on whether you are trying to take care of the wet condition of the wood in your cooking process. This does not apply to newsprint sulphite but it does apply to any higher grade. I should think if you have decayed wood and a certain strength of fibre is desired, by not cooking it so far down you will make a little harder pulp and this always results in a little higher screenings. Another thing that might happen is that the decayed wood might give a darker acid. In mills where the cook judges the cooking process by the color of the acid he will blow the digester a little earlier than he would have done with sound wood, the result being that he gets a harder pulp with higher screenings. Another factor is that the amount of knots is the same in the decayed as in the sound wood, but, based on a low yield, the percentage would be a little higher with decayed wood. All of these factors together might result in a little higher percentage of screenings.

MR. JOHNSON: I had occasion to come across conditions that might answer Mr. Mason's question. Some three years ago we had from 3000 to 5000 cords of spruce that had lain in the yard for some six years. We found in making it into groundwood that there was considerable spot rot and heart rot. We found considerably more heat generated in the grinder pit than when using sound wood, that it required more treatment, that we had more trouble on the wet machine, that we could handle less tonnage per machine and that the groundwood pulp did not have the strength or the color that good spruce will have. For that reason the thought came to me to make sulphite out of it. By taking the individual cooks, by making a strength test of every cook, by beating the pulp and by making a bleaching test for the bleaching figure, we found that we could get a good pulp. But I was up against a peculiar situation; I had to have a pulp which was sufficiently strong to use as unbleached pulp in the making of book paper. The screened stock had to have a sufficiently low bleaching figure to bleach economically and that is what we were up against. With the high percentage of rotten wood, and later on with the balsam which was coming in and running about ten or fifteen per cent of heart rot, we found it was impossible to make a pulp which was sufficiently clean and we found it was necessary to sort the wood preliminarily in the wood room, but eventually in the wood yard in order to separate the good wood from the poor wood. In cooking rotten wood, by closely following my strength tests and my bleaching tests, and by watching my liquor, I was able to keep my acid concentration the same but the sulphur and the lime went up. I was using a steam flow meter on the digester and I found during the cooking that we were able to maintain the acid concentration but at the expense of sulphur lime and steam. There was spot and heart rot in that wood and we were not able to make the pulp sufficiently clean to use under these conditions. I would like to ask Dr. Johnsen if he had had any experience along those same lines or any experience in regard to the treatment of rotten wood.

DR. JOHNSEN: Our experience in cooking decayed wood has been that we get a lower yield and a higher consumption of sulphur and steam per ton of pulp. The most decided effect of decay is seen in the beating quality and the strength. The slowness is increased very materially. I do not know whether that answers your question, Mr. Johnson?

MR. JOHNSON: I was thinking chiefly of the brown specks that we had considerable trouble with especially in handling rotten balsam.

DR. JOHNSEN: We were cooking decayed wood which had been in our yard for a couple of years. I think we had more dirt than we had with sound wood which may be due to the fact that the dirt had collected in the parts of the wood that were checked. I think that generally you will find that if wood is very much decayed the pulp will be dirty.

MR. JOHNSON: What I had specially in mind was the redheart which is to be found throughout Wisconsin, Minnesota and Ontario. I find that a large percentage of the balsam, when it gets over six inches, has redheart, and I have been led to believe that a great deal of the small dirt is due to that red heart. I do not know whether you have had the same experience or not.

DR. JOHNSEN: I cannot say that we have had any experience on that point. The question is one as to whether these spots will bleach or not. I am not quite sure about that.

MR. WARDLE: Should we not take some action on Mr. Thorne's suggestion to appoint a Committee on the measurement of pulpwood. Possibly this comes within the province of the Woodlands Section should they choose to take it up. Shall we have a joint committee or let them handle it entirely? It seems to me that something should be done about it.

MR. BRYANT: There certainly should be something done about it. It has generally been the custom to allow the incoming Executive to appoint the chairmen of committees, and, if there is no objection to it, this matter will be taken up by the incoming Executive. They will find out what the Woodlands Section intend to do about it and probably, as you suggest, it would be well to form a joint committee. Is that satisfactory?

MR. WARDLE: I will make the motion:

"That a Committee be appointed by the incoming Executive to deal with the question of the measurement of pulpwood."

MR. DURGIN: I have much pleasure in seconding that motion.

Motion agreed to.

THE PAPER EXPOSITION

Following the discussion on the paper by Dr. Bjarne Johnsen and H. N. Lee, of the Hammermill Paper Company, Thomas J. Keenan, of New York, was asked by Chairman Bryant to speak of the progress made in the organization of the Paper Industries Exposition which is to be held at the Grand Central Palace, New York, during paper trade convention week, April 9 to 14, 1923.

Mr. Keenan said he had been originally appointed a member of the Advisory Committee of the Paper Industries Exposition, but on becoming acquainted with the ambitious character of the project, he had decided to give his whole time and attention to the work of arranging for exhibits that would show the extent and importance of the industry in its national aspects. The exposition was receiving the enthusiastic support of leaders in the industry and a well rounded and comprehensive exhibition of paper and paper products was assured. Paper machinery manufacturers were also intensely interested in the exposition, and types of machinery, apparatus and equipment would be abundantly displayed. Spaces had already been reserved for paper converters as well as for the larger paper merchants and dealers in mill supplies and raw materials, so that it appeared certain that a complete exposition of paper manufacture in all its branches would be assembled.

Mr. Keenan asked for the interest and cooperation of the members of the Technical Section of the Canadian Pulp & Paper Association and extended an invitation to them to attend, saying that the managers of the exposition would accord the privilege of free admission at all times during the week of the exposition to members of the Canadian Pulp & Paper Association.

He stated that the Technical Association of the Pulp and Paper Industry was expected to hold sessions on one day at the exposition and at the close of the sitting the members would be conducted on a tour of the exhibits. The same course would likely be followed by others of the service associations of the American Paper & Pulp Association and the National Paper Trade Association which would be in session at their annual conventions during the entire week of the exposition, Monday, April 9th to Saturday, April 14th. The exposition was being conducted, he said, in close cooperation with the officers of the National associations, many of whom were serving on its Advisory Committee.

In closing he thanked the chairman and officers of the Technical Section for the interest in the exposition which they had manifested by calling on him to address the meeting and again extended a hearty invitation for the section to be represented at some of the functions to be held in connection with the exposition.

During his stay in Montreal, Mr. Keenan talked with a large number of manufacturers and the representatives of educational institutions and received many assurances of support and cooperation.

MR. BRYANT: I am sure that the members of the Technical Section appreciate the hearty invitation Mr. Keenant has given us and I think I can further assure Mr. Keenan that all who are able to do so will be very glad to visit the exposition.

(To be continued)

DWIGHT P. ROBINSON & CO., INC., OPEN PHILADELPHIA OFFICE

The opening of a Philadelphia Office is announced by Dwight P. Robinson & Company, Engineers and Constructors. The new office will be under the direction of Mr. Carl A. Baer, Member American Institute of Electrical Engineers, who was recently with the firm of Baer, Cook & Company, Engineers, and a consulting engineer in the design of industrial, textile and power plants.

British Trade News

Reports of a Better Feeling and Signs of a Trade Revival

(From our London Correspondent)

London, March 24, 1923. Today paper week in London was brought to a close when all the mill owners and their friends returned home to digest the reports, — and the dinner, — in conjunction with the flood of oratory, which have helped to make the annual gatherings of the British Papermakers' Association and the Technical Section a great success.

Lord Riddel, one of the big newsprint consumers, could not attend at the last moment and the dinner speeches were shorn of a witty and humorous oration of the first water.

The Industry

The gathering was a record one and Viscount Burnham, who has just returned home after a visit to America and the West Indies, proposed the toast of the British Papermakers Association and the paper industry. He mentioned that in company, papermakers were always cheerful. If there was a good deal of paper out, there must be, at the same time, a good deal of paper in and the paper in, he supposed, was the bank paper of the best quality.

After this little tinge of humour in his opening remarks, Viscount Burnham remarked that he did not mean to say that any of the papermakers during the past year could have rivalled the historic and unforgetable achievement of the German industrialists, who, in four years, sold some five or six tons of paper to farmers in the United States and other consumers for £700,000,000 (Laughter from all tables greeted this announcement.)

At the same time British papermakers were cheerful and confident because they knew that theirs was the essential industry of modern civilisation. The world would perish on its moral and intellectual sides if it were not for paper, and, therefore, when the paper trade was looking up, as it was today, the whole world ought to rejoice with them. He had come recently from the other side of the Atlantic and there was no doubt they had to look to the United States for the forecast and anticipation of what was to come to them all. There was no doubt about the state of the paper trade in America. During the last year the States consumed 2,680,000 tons of newsprint, an advance of over 7 p.c. a year over 12 years. That advance was no casual or accidental phenomenon. It represented a genuine growth of consumption which must, in the end of things, go on, for when they realised that the Southern States, which were so long allowed to lie fallow, had now developed industrial activities on a vast scale, necessitating employment in centres of population of millions of men, they could also realise what would be in the near future an increased demand on the part of America for the commodity with which they dealt.

Cost of Raw Material

They might think that in England, though there were signs of progress, the steps were slow and halting. At the same time, they could see from the report presented to Association, that the rate of unemployment during the last year in the British paper trade was a good deal below the average — only about one-half — and vastly below that of some of the staple trades which might be put into comparison.

They noted, he did not say with satisfaction, but as an infallible guide to what was bound to come; a continuous advance in prices in their raw material. There had been during the past six months an advance of 20 p.c. in price both in chemical and mechanical pulps, although they might regret that up to the present there might not have been a corresponding advance in the manufactured article. At the same time they knew very well that if the papermakers of Scandinavia had advanced their prices in proportion to the pulp industry they would that evening at that dinner — but perhaps, as not all of them were newspaper proprietors, that was not a tale to tell.

On the other hand, it could not be disputed as an economical proposition, that when they had a steady advance in the half manufactured product, an equivalent advance in the finished article was bound to follow. Personally, although he took a sober and cautious view of the industrial position in the country of staple trades, as a whole he was bound to say he felt optimistic as to the paper industry for national, and even more, for international reasons.

He did not see how the American demand could be satisfied in the long run, without resulting in an upward trend in the paper market. It struck him sometimes that in England, putting aside newsprint, it could not be long before there was a movement similar to that which one noticed so much in the United States, a movement of public health for the purity of food and that it would not be many years before the consumers of this country would insist upon having some hygienic wrappings for what they bought and ate, as did now the great communities on the other side of the Atlantic.

Conditions Improving

This concluded the Viscount's speech and Canadians interested in the latter part of it should convert the hints — the Viscount is a man who knows what he is talking about — thrown out into some tangible business. Develop the market and show what you can sell.

The President of the British Papermakers' Association (Mr. Seddon), responded to the Viscount's toast and before settling down to some facts for the gathering, he paid a high compliment to the splendid services rendered the Association and the industry by Mr. W. L. Tod during 1921, 1922-23.

During the past year, he went on, business in papermaking had been more or less restricted to immediate requirements, and thus the whole year had been employed in settling down and enterprise had lacked encouragement. In the latter part of the year, considerable improvement had taken place in some sections, but there was one branch of the trade in particular, namely, the browns and wrappings section, which was so fiercely beset by the abnormal conditions arising from the great importation of foreign papers that even the strictest economy in manufacture was insufficient to give them a chance of competing successfully against forces over which they had no control.

Speaking generally, added the President, the prospects were more hopeful for most of the high-priced stocks had been replaced and onerous contracts had no doubt been more or less compounded, and during the past year many machines had been restarted after a period of most depressing idleness for want of orders. He was pleased to say, however, that there was at present a better feeling and a stronger hope that with the increased demand resulting from a gradual general improvement of trade, the year 1923 might yet justify the old adage that everything comes to him who can afford to wait.

Foreign exchanges, concluded the President, were said to be responsible for their calamities, but when he read that in Germany twelve paper machine-makers and thirty-three printing works were occupied in producing paper marks, he felt that he was thankful that he was an Englishman.

Sections Hard Hit

It was felt that the President's speech was one of the most business like listened to for many years and it depicts the grasp of affairs he has and of things interesting. Past presidents had a happy knack of shuffling away from the interesting elements appertaining to the industry.

Capt. W. Nash proposed "Our Allied Industries." He said they were gratified to hear from Viscount Burnham and the President that the paper industry was definitely improving and that they might expect a brighter period in the future than had been their recent past experience. Latterly, the paper mills had been kept fairly busy, but in the fine writings and wrapping sections they had often to close down on Thursday or Friday evenings. Those times they felt were now passing and they were looking forward to better conditions.

Sir Andrew Caird, in reply to the toast, said he believed it was really the ambition of papermakers throughout the world to make paper cheap. The industry was regarded as an important one, with a high reputation throughout the world, and they were glad to watch its progess and prosperity.

Sir Fred. Becker, proposed the health of the visitors and said that in every branch of the industry they felt the pinch, but he thought better times were coming all round.

Sir James Owen, in reply, mentioned that the paper industry was a trade barometer. If it was busy all the trades in country were busy, and from that point of view they all hoped that renewed prosperity would visit the trade.

Conclusions

Most of the points touched on in the speeches bear out what I have written during the past two or three months in the "Pulp and Paper Magazine". The position and attitude of the Scandinavians over the prices of papers and pulp is also interesting. Prices are not harmonising with pulp and the cheap foreign imports amongst papers particularly wrappings should give an idea to Canadians of what the market is like on this side of the Atlantic. "Even the strictest economy in manufacture is insufficient to give us a chance of competing," says the President. It is a deplorable state of affairs and shows that the British buyers do not care one iota where the paper comes from so long as they can get it cheap. No doubt the British papermakers are to blame to some extent for this policy, as they have never ventured upon a real, stirring and conclusive propaganda to enlighten the consuming public of the grave injury done to British and Canadian industries, by purchasing at sweated labour prices the products of foreign paper mills. A measure of protection would check these foreign prices and help British industry.

Next week I will deal with the business side of the Association.

Technical Section

REVIEW OF RECENT LITERATURE

K — Paper Making and Equipment

K-7 Degree of Beating and Hydration G. G. Schwalbe. **Wochbl. Papierfabr.** 54, 22-23 (Jan. 6, 1923). Review of the conditions influencing hydration phenomena in the beater, as well as in the sulphite and soda cooking processes. Methods of determining hydration are listed. The time factor is important since in some cases the degree of hydration decreases after 6 or 9 hours. Mucilage formation is markedly influenced by the temperature, dissolved salts and drying. The importance of colloid chemistry is emphasized. -J.L.P.

K-7 Studies on Mechanical Paper Technology. F. Bobroff. **Bumazhnaia Promyshlenost,** I, No. 1, 7 24 (July & Aug. 1922). It is shown mathematically that the following expression can be derived for the heating of fibers:

$$\frac{A}{m} = 2 \cdot \frac{F_{max} - F_0}{T \cdot t}$$

where $\frac{A}{m}$ — condition of material after time of beating t: F_0 = initial surface: F_{max} = surface of material after complete reduction (either beating to smallest paricles or to maximum development of surface) at the end of time T. Equation between $\frac{A}{m}$ and energy spent is also given. The remainder of the article is purely theoretical. -M.C.

K-7 Device for Measuring the Degree of Beating. F. R. Poller, Ger. Patent 366, 129. .**Papierfabr.** 21, 29 (Jan. 14. 1923). Similar to the one described by Skark in **Paper Tr. Jr.** Page 53, Nov. 23, 1922.-J.L.P.

K-7 Parchementizing Paper and the Reaction of Mordants. J. E. Minor. **Science** 53, 25 (1921); **Chem. Abs.** 16, 4345 (Dec. 10, 1922). The work of Schwalbe and Becker confirms theories of the author as to the reactions which occur in the decomposition of cellulose during beating (see Minor, **P.P.M.C.,** 19, 742, July 14, 1921.) The hydroysis of cellulose forms dextrins which are mucilaginous, soluble in water and easily reduce Fehling's solution. These dextrins are readily absorbed by pure cellulose, this constituting the reacting, insoluble colloidal hydrocellulose and in this position they catalyze further cellulose hydrolysis. Complete hydrolysis leaves only soluble dextrins or sugars. For a mucilaginous accumulation such as is desired for making parchment paper, the velocity of the initial reaction must be catalyzed, either by the hemicelluloses of wood incrustation or by an acid treatment of the pulp prior to beating. Acid treatment reduces the time required to beat to mucilage to from one-half to one tenth of the original time required, and increases the strength of the paper made from it. Pulp mucilage has a greater power of splitting salts and absorbing metal ions than has cellulose and assists in holding size, dye, coating, etc. Metal impregnation weakens the strength of the paper.-A.P.-C.

K-7 Process and Apparatus for Measuring the Degree of Beating in Paper-stuff Hollanders. German Patent 357,719. F. Mueller. July 5, 1921. The weights, acting on the knife roll and the other forces are counterbalanced by means of an arrangement of weights which act on the movable roll bearings. In this manner the knife roll is loaded with weight than can be accurately determined, so that the actual force which is being exerted between the knives and the bottom plate may be read off at any time and may be adjusted at whatever point may be desirable.-I.G.

Sizing

K-10 Degree of Dissociation and Unsaponifiable Matter in Rosin Size. A. Haug. **Wochbl. Papierfabr.,** 54, 25-27 (Jan. 6, 1923); 243-245 (Jan. 27, 1923). A continuation of the article in the same magazine, 53, 3935-3938 (Nov. 4, 1922). Sodium resinate, when highly diluted with distilled water, undergoes hydrolysis which is approximately 100 per cent. With city water, sodium resinate yields a precipitate becoming larger on dilution. Rosin milk, containing 20 per cent unsaponifiable matter, was not as highly dissociated and gave an emulsion with larger particles. Unsaponifiable matter brought about an easier flocculation. The presence of free rosin in a size solution containing sodium resinate and distilled water produced no decided increase in dissociation upon dilution. Beyond a definite point the dissociation dropped. The emulsion was fine. The presence of unsaponifiable matter resulted in coarse emulsions; this happened in all the tests. An actual sizing experiment, with as high as 50 per cent unsaponifiable matter in the rosin size, showed that unsaponifiable matter had no effect on the sizing. The saponification number is not recommended as the test by which rosin should be judged as to its sizing quality; rather, the color should be used as the quality test.-J.L.P.

K-10 Sizing of Paper. Ger patent No. 359,406. H. T. Boehme March 25, 1917. This patent is concerned with a process of sizing paper with ozocerite emulsions. These emulsions contain either in part or in whole crude ozocerite. The crude wax does not emulsify easily, but it is more suitable for sizing paper than refined ozocerite. The process consists in treating 600 kilograms of the crude wax in an autoclave with 45 to 200 kilograms of caustic soda solution at 36 degrees Be. After the volume within the vessel has reached 1,000 liters, the cover is closed and the contents are heated for 5 to 10 hours under a pressure of 5 to 7 atmospheres. The heating is continued until a test sample of the ozocerite wax will emulsify perfectly with yater. At this point the wax is ready for use. About 400 kilograms of the wax are dissolved in 600 liters of hot water. The milk size which is obtained in this manner, is used in the sizing of paper in the proportion of 20 to 30 liters per 100 kilograms of paper stuff. The sizing is accomplished in the hollander; complete precipitation is secured by the use of sulphate of alumina, bisulphate, dilute sulphuric acid, etc. The results are excellent.-I.G.

PULP AND PAPER NEWS

Unless rain or thaw comes before the twentieth of the month the Abitibi pulp and paper mills may have to close down owing to lack of power. For well over a month the mill has been run less than half full capacity to conserve water so as to keep the mill running through till the break-up. Now, with the heavy frosts and no thaw the water in the whole north is getting very scarce. It is stated that every plant in the north is suffering. Although there was a rise in temperature on April 3rd it is not thought there will be a run-off till the fifteenth at least. If it is delayed later than the twentieth the situation will be serious.

E. S. Munroe, Vice-President of the Wilson-Munroe Co., Limited, paper dealers, Toronto, and treasurer of the Canadian Paper Trade Association, has returned from a couple of months spent at St. Petersburg, Florida. On his way back Mr. Munroe dropped off at Richmond, Virginia, where he was the guest of the Richmond Paper Company, whose mills he inspected.

Georges Warburton, formerly with Cameron & Fraser, paper jobbers, Bay Street, Toronto, has joined the staff of the A. White Paper Company, Bay Street, Toronto.

C. Nelson Gain, of the Don Valley Paper Company, and A. P. Costigane, secretary of the Ontario Pulp and Paper Makers' Safety Association, Toronto, were in Montreal last week attending a meeting of the Council of the Technical Section of the Canadian Pulp and Paper Association.

The consumption of power by Port Arthur industries from the Cameron Falls development was increased on April 4th by 1,000 horsepower which was turned into the plant of the Provincial Paper Mills, Limited. The mills now operate under a load of approximately 3,000 horsepower.

The current issue of the Ontario Gazette contains the announcement that the Hammermill Paper Company, created under the laws of Pennsylvania, has been licensed to operate in Ontario, using capital not to exceed $500,000.

In the Ontario Legislature last week D. M. Hogarth, Conservative member for Port Arthur, introduced for first reading a measure "to provide for the transfer of certain lands located within the city limits of Port Arthur to the municipality of Shuniah." The bill will pave the way for the transfer to the adjoining municipality of Shuniah of a Port Arthur industrial site, which the Great Lakes Pulp and Paper Company are said to have declared was acceptable. The Attorney-General inferred the move to mean the bonusing of the industry to locate elsewhere than at Fort William Mission site, but Mr. Hogarth declared that there was nothing of a bonus nature involved. The company would simply pay Shuniah taxation, at the same time utilizing Port Arthur utilities while taking 10,000 horsepower from the Nipigon power development. The bill will go before the committee to be fought out.

The Buntin Reid Company, Limited, the Toronto paper jobbing house which was recently taken over by John Martin, of Winnipeg, and associates, has received a charter from the Ontario Government. The charter is a wide one and empowers the company to engage in paper jobbing as well as lithographing, printing and paper manufacture. The capital stock is placed at $300,000.

With power to engage in a general lumber and pulp and paper manufacturing business A. E. Carter, Limited, has been granted Ontario incorporation, with headquarters at Fort Frances, Ont. The authorized capital is $40,000 and the provisional directors are A. E. Carter, E. J. Carter and Hugh A. Tibbetts.

Guy Durgin, technical assistant to the General Manager of the Spanish River Pulp and Paper Mills, Limited, at Sault Ste. Marie, was in Toronto for a few days last week on company business.

The St. Lawrence Lumber Company of Quebec City are installing a Canadian Barking Drum at their plant at Amqui, Que. The Hawk Lake Lumber Company of Monteith, Ont., are also installing a similar drum at Mile 45, west of Cochrane on the Transcontinental Railway. Both of these companies are engaged in the pulpwood business.

Maintaining that a strong agitation has been carried on in Australia to keep Canadian goods out of that country, and that it has been aided by British manufacturers, Howard Smith, head of the Howard Smith Paper Company, Montreal, and First Vice-President of the Canadian Manufacturers' Association, made a strong plea for combined interest before a representative gathering of manufacturers at the King Edward Hotel, Toronto, on the evening of April 4. He is deeply imbued with the idea that Canadian exporters who want to get a good share of business in foreign markets, must combine and go after it. Dealing with paper as one commodity, which, during the war was shipped from Canada and placed in Australia at a lower rate than German and other competitors, he said that now the Government of Australia had placed a duty of $3 a ton on paper exported from this country, giving British manufacturers the preference. Mr. Smith advised an aggressive and organized effort on the part of Canadians to capture their share of the world's markets.

J. R. Booth, founder of the J. R. Booth Co., Limited, lumber and paper mills, and builder of the Canada Atlantic Railway, celebrated his ninety-sixth birthday on April 5th and followed his regular habit in Ottawa of attending his office and supervising work at his large plant. Following a custom established some years ago, his employees presented him with a basket of 96 choice roses. The veteran lumber king has been enjoying good health and visits his mills nearly every day. He was born in Waterloo, Que., and has been a resident of Ottawa since 1857.

Details of Government proposals in the matter of leasing the Gull River area in the Nipigon Forest Reserve to the Fort William Paper Company have been asked for in the Ontario Legislature by H. S. Cooper, Liberal member for Northwest Toronto. After asking for full information, and whether the sale will be made privately or publicly the member asks if the interests of the Canadian National Railways in the matter of tie timber have been considered; if the Government is aware that the concern is a subsidiary of the Spanish River Pulp and Paper Company, and so on. He enquires if the Government is aware that the natural manufacturing point for Gull River pulpwood is not at that concern's Fort William plant and he wants to know what consideration will be given to the smaller operators in the Thunder Bay district.

Capt. Thomas Ganley, Commodore of the tug fleet of the Spanish River Pulp and Paper Mills, Limited, and one of the oldest navigators on the Great Lakes, was a visitor in Toronto last week.

George Winlow, of the Lincoln Paper Mills Co., Limited, was a business visitor in Ottawa and Montreal last week.

Robert S. Crump President of the Standard Paper Manufacturing Company, Richmond, Va., called on the Toronto paper trade last week.

The Allan Paper Company, Limited, wholesale paper jobbers, are carrying out some improvements to their warehouse on Simcoe Street, Toronto. The basement is being fitted up for the storage of heavy stock and a street entrance to it is being constructed. About 3,000 additional square feet of space will be added.

A number of the big Toronto paper jobbing houses have just issued new price lists as of March 1st., showing increased prices in some lines, notably boards and bristols, and a raise, in comparison with former price lists in the lower grades of bonds.

The marriage took place in Toronto last week of Capt. J. W. Pauline to Miss Johonson, Toronto. The groom is a brother of George W. Pauline, assistant managing director of the Ritchie Ramsay Company, paper manufacturers, Toronto.

O. A. Porrit, general manager of the Belleville Paper Company at Belleville, Ont., was a business visitor in Toronto last week. Recent improvements in the plant of the Belleville Paper Company which have now been completed give the company an output of ten tons of straw board per day and Mr. Porrit says the product is finding a ready sale.

W. J. Finlay of the Strathcona Paper Company, Strathcona, Ont., who was in Toronto last week on business, says his company have considerable orders ahead and that business generally is keeping up well.

A. A. Cullen of Miller Brothers Company, Glen Miller, Ont., spent several days last week calling on the Western Ontario paper trade.

R. A. McInnis, general manager of the Abitibi Power and Paper Company, has just returned to his duties after an illness of three months. To signalize the event the people of Iroquois Falls Ont., turned out en masse to a public banquet which was attended by a large number of the town's leading citizens. In his speech Mr. McInnes said that the Abitibi Company was naturally organized as all other businesses are, for the obvious purpose of making money, but it had not attempted to achieve financial success by slave-driving methods, or by trying to exploit its workers.

The Canadian Export Paper Company, Limited, have removed from the Sun Life Building to the Canada Cement Building, Montreal.

A new pulp and paper mill is planned at Fort Alexander and scheduled to commence operation in the Spring of 1924.

The technical section of the Canadian Pulp and Paper Association has been invited to hold their summer meeting at Port Arthur and Fort William about the middle of July by the Provincial Paper Mills Limited at Port Arthur and by the Fort William Paper Company at Fort William. Tentative plans have been made to take an expression of opinion of the members by vote in June, and circulars giving details are being sent out by the Canadian Pulp & Paper Association. The trip will be by boat and the meeting of the section will be held during the trip. A very interesting program ,from the technical and entertainment points, is assured.

WHAT A GRINDER MAN SAYS OF STUDY

I am of the opinion that the time is not far distant when all large manufacturing companies will insist on their employees taking some course of study covering the work of that department in which they are employed. Last October, when the Nekoosa-Edwards Paper Company, presented at an open meeting a most liberal proposition to all of its employees, desiring to take anyone of several courses offered by the University of Wisconsin Extension Division, I recognized an opportunity to add to my practical knowledge of pulp making, the theory, realizing that it would be a great help to me in my work.

I want to say that, thanks to Prof. Jackson, who has been with us each meeting night, and has made the subject matter so clear and presented it in such an interesting way, that "going to school" again has been one of the bright spots in my life this winter. It has brought out one thing very clearly to my mind, a man may be well up in his work from a practical point of view, but he must dabble in the theory just enough to get started. Then he gets interested, then he wants more of it and shortly he realizes that there is much more to his work than he dreamed of, as just a practical paper man. —A. J. Dudley, Nekoosa-Edwards Paper Co.

THE MAN WHO GETS PROMOTED

The ordinary fellow does an ordinary task,
He's mighty fond of "good enough" and lets it go at that;
But the chap who gets promoted, or the raise he doesn't ask,
Has just a little something more than hair beneath his hat.

The ordinary fellow lives an ordinary day,
With the ordinary fellow he is anxious to be quit;
But the chap who draws attention and the larger weekly pay
Has a vision for the future, and is working hard for it.

The ordinary fellow does precisely as he's told,
But someone has to tell him what to do, and how and when;
But the chap who gets promoted fills the job he has to hold
With just a little something more than ordinary men.

—By Edgar A. Guest, Labor World.

UNITED STATES NOTES

Testifying last week before the Senate special committee on reforestation, Col. W. B. Greeley, Chief of the United States Forest Service, asserted that a timber famine already has begun in the United States and will become worse before it can get better. Saying that his views were not generally shared by lumbermen, Col. Greeley took the ground that reforestation is largely a matter of private ownership and business, provided the state gave adequate protection against fire and a system of taxation adapted to the necessary long period of tree growing. Many lumbermen, he said, believe that private capital will not generally undertake reforestation because of the long wait necessary before returns and be realized. Col. Greeley said that the total merchantable timber is 2,200,000,000 board feet and that the ratio of depletion to regrowth is about four to one. Theoretically, without change in present conditions of regrowth and depletion, American forests will be exhausted in thirty to forty years. While the actual amount of standing timbed is still large, though about 1,500,000,000,000 below what it should be to balance depletion and new growth. Col. Greeley maintained that in effect the principal lumber using parts of the country are now suffering from timber famine resulting from the high freight rates caused by the long distances of the remaining forests from the consuming centers.

George A. Galliver has resigned as president of the American Writing Paper Company and from the Board of directors, S. L. Willson, vice-president and general manager, has been designated acting president in view of Mr. Galliver's resignation. Mr. Willson will probably be elected president of the company at the annual meeting on April 24.

The National Association of Hosiery and Underwear Manufacturers plans the standardization of paper boxes used by members for packing their product. The losses incurred by the hosiery trade through the lack of uniformity in paper boxes, it is said, runs into millions of dollars. Large sums of money ahe lost annually by knit goods manufacturers because of the lack of standardization of yarn cones.

The Board of Directors of the International Paper Company have declared a regular quarterly dividend of one and one-half per cent on the preferred capital stock of the company, payable April 16th, to preferred stockholders of record at the close of business April 9th.

The Canadian Society of New York City, at its annual meeting held in the Biltmore Hotel last week, elected J. Spencer Smith of Tenafly, N. J., president for the ensuing term. Mr. Smith is president of the Board of Commerce and Navigation of the State of New Jersey and vice-president of the Port of New York Authority. In accepting the presidency, Mr. Smith declared that the Canadian Society symbolized in its membership "the hope and promise that as long as we remain true to our ideals we will be a sign unto the world that the English speaking peoples will dwell in harmony with each other."

According to a recent consular report, a German architect of Heimstedt, State of Brunswick, has succeeded in producing a durable, practical furniture made of pasteboard. So much importance is attached to the achievement by the State of Brunswick that it has given the inventor special concessions in a lease of a part of its former crown lands, where he is now preparing to erect a factory. Heimstedt experts declare the furniture will meet every requirement.

The new Sterling Chemistry Laboratory was dedicated by Yale University, New Haven, on April 4th. It will represent an investment of $2,000,000 of the funds made available by the bequest of John W. Sterling.

In a bulletin issued by the Forest Extension Service of the New York State College of Forestry at Syracuse University, the prodigality in the use of forest lands by Americans and their wasteful practices in this regard are pointedly shown by comparisons with forest husbandry as practised in other countries having very much smaller wooded areas, notably Sweden, Germany and France. In waste land areas where trees once grew, but on which nothing now grows, the United States, according to the bulletin, leads the world by a disgracefully large margin. This area represents more territory than the combined forest lands of Germany, Belgium, Denmark, Holland, France, Switzerland, Spain and Portugal. Another vast acreage of semi-devastated forest land has been cut over and is producing only one-fourth of the forests it should grow, says the college. This region is almost as large as all the States on the Atlantic seaboard. These vast tracts are being increased annually by three or four million acres. Much of this is taken from the virgin forests and will last no more than twenty-five years at the present rate of cutting. The United States leads all the nations of the world in forest fires with a total of 30,000 annually. Every twelve months during the five years ending in 1920 approximately 9,000,000 acres were burned at an average estimated loss of $85,000,000.

The Rudolph Paper Company of the Bronx, New York, which manufactures waxed paper for food wrappers, is planning an expansion which will enable it to double its output. Mr. Rudolph, the president of this concern, sees in the future of the waxed paper industry a great opportunity for business development. He says: "The slogan of the hour in the food industry is 'sanitation.' It is not a fad, it is a permanent necessity. Waxed paper is one of the most important agents in providing that sanitation. The continued demand for it is assured. That is why the waxed paper industry is to-day an industry of the greatest opportunity."

Fifty-five forest plantations of 10,000 trees each will be made this Spring in every county in New York State having idle in lands suited to reforestation, says Conservation Commissioner MacDonald, who, as part of an intensive campaign of education being carried on in connection with the State's reforesting movement, has compiled information on all forest plantations made in the State since 1908, showing when, where and by whom every plantation was made, together with the number and varieties of the trees.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, April 10 There is little or no change in the local paper trade conditions. Business is moderately good, although generally speaking orders are not of large volume. The opening of navigation is not far off, and when this occurs there will probably be a little more activity. The ocean and lake business means a great deal to Montreal, and its inauguration gives an impetus to all classes of trade. The indications are in the direction of a very busy season, both as to the passenger and commercial departments.

The mills are fairly busy, with orders keeping up in a very satisfactory manner. Although no decision has yet been made as to the prices of book and writing paper's an advance may be looked for at an early date.

The demand for newsprint is as good as ever. Mr. A. L. Dawe, of the Canadian Export Paper Company, who has just returned from a month's trip to the States, reports that there is every prospect of that demand keeping up. The return of the imports into the States shows the commanding position of Canada in supplying to the States. The return for December completes last year's figures. In December the total imported was 98,494 tons, as against 79,637 tons in 1921, and of that Canada supplied 50,640 and 62,945 tons in 1922 and 1921 respectively. For the year the imports were 1,029,266 tons compared with 791,978 tons. Canada's share was, in 1922, 896,312 tons and in 1921, 656,204 tons, while Europe sent 132,954 tons in 1922 and 135,774 tons in 1921. It is pointed out by the Canadian Pulp & Paper Association that the imports of European newsprints into the States in 1922 were higher than was expected, due to heavy receipts in the last three months. Imports from Canada increased over 1921, 240,180 tons or 36 per cent. The consumption in 1922 was put at 2,440,624 tons; imports therefore represented 42 per cent of the total consumption.

In bonds, ledgers and writings there is a steady demand; tissues and toilets maintain their activity and boxboards are selling very well, this being the season when there is usually a strong call for boxes. The paper stock department is very firm, with rags scarce and waste paper moving freely. The roofing felt mills are busy, and have a very large number of orders in hand.

The most interesting feature of the pulp market relates to the Swedish lock-out. The trouble is now being adjusted, according to the following telegram received by the American Pulp & Paper Association from Stockholm. "Agreement made in the sawmill conflict fully expected to be ratified April second, after which twenty-four thousand men will return to work. Another arbitration plan for wood pulp conflict will be submitted April fifth, with reasonable hope of success." Bleached sulphite is still in active request, with prices at from $90 to $100. Stocks on hand are low. Groundwood is weaker, the better water powers affording facilities to greater production. During February Canada produced 71,356 tons, as compared with 64,346 tons in February last year, while during the first two months of the year the total was 148,762 tons as against 137,674 tons in 1922. At the end of February the stocks were lower than for a considerable period. The figures are 302,284 tons, a decrease of 5,000 tons during the month. At the end of February 1922, the stocks were 68,898 tons. It is pointed out that at the end of February last a good proportion of the Canadian stocks was held for the use of the mill and some of it is sold for future delivery, so that the stocks for sale are not very large. Of the 45,356 tons exported this year, 32,232 tons went to the United States and the other 13,124 tons to the United Kingdom.

The available stocks of pulpwood for sale in the Provinces are reported to be low. Prices are stronger, $14 to $15 f. o. b. point of shipment for peeled wood.

TORONTO MARKET NEWS

General pulp and paper trade conditions in Ontario continue to show a healthy trend although it must be admitted that April has opened up rather dull in the jobbing end of the business. While it is expected that trade will develop during the month, it is the testimony of most of the wholesale paper merchants in Toronto that orders just now are coming in slowly and individually small in bulk. No reason is assigned for the falling off, other than the extremely backward tendency of Spring, the buying public not having recovered from the severity of the weather as yet. On the other hand the mills for the most part are fairly busy and production in most lines keeps up and is being absorbed. One explanation of the satisfactory volume of business being done by the paper manufacturers is that many jobbers placed rather extensive orders a couple of weeks ago when higher prices appeared to be impending and these have and are still furnishing considerable business to the manufacturers. Then, also, the paper converters are quite busy and are using a considerable quantity of stock in the manufacture of blank books, stationery etc. The printing trade continues quiet and at the best spotty, although an improvement is predicted within the next couple of weeks by which time it is also expected that the paper jobbing trade will be in normal swing again.

PULP. — Groundwood pulp is still quoted at from $35.00 to $42.00 and whatever surplus there is apparently is being absorbed fairly well. Most of the groundwood is made by the northern mills and the weather has not affected the water as yet. Both buyers and sellers are looking for lower prices when the free flow of water commences. The sulphite market is reported as fairly firm with bleached sulphite quoted at from $85.00 to $90.00 and unbleached at from $55.00 to $75.00. Sulphate is quoted at $65.00.

TISSUES AND TOILETS. — Manufacturing conditions are satisfactory and mills are running full although buying generally is inclined to be a little cautious. Prices remain firm and mills report that they are disposing of their products although under the necessity of employing their best in the way of salesmanship.

WAX PAPER. Light weight paper manufacturers report that they are not selling the wax paper makers anything like the quantity of paper they have been disposing of to them of late and waxing plants report business as being only fair, with a rather smaller demand for wax paper products during the past week or ten days.

WRAPPING PAPER AND BAGS. The wrapping paper trade is passing through a quiet period and the same may be said of paper bags. The demand for these lines has fallen off considerably during the past two weeks but the return to good business is looked for with the arrival of decent spring weather. Manufacturing plants, however, report fairly active conditions, most of the plants running steadily. The demand for kraft keeps up and there is a particularly good business doing in flour sacks.

COATED PAPER. — Coated paper mills are still under the handicap of having to pay extremely high prices for their raw material. The casein market is still very high, that article now being quoted at from $21.00 to $23.00, c.i.f. New York and Boston. There is a fair demand for coated stock and the mills are running fairly full. One manufacturer stated that casein plants were now offering their product for delivery June to December, which indicates that the supply is easing up a bit after a considerable period of market shortage.

BOOK AND WRITING PAPERS. — The book mills, particularly, are busy and are running full, with orders booked ahead for a couple of months, while writing and bond paper mills are only fairly busy with a slight falling off in production. Trade on the whole, however, in these lines, is quite satisfactory, although some of the mills are not quite so busy as previously.

RAG AND PAPER STOCKS.— The rag market on the whole shows a strong tendency and there is a firm trend to the lower grades of old paper stocks. Supplies for the most part are limited in a number of lines. Roofing rags are particularly strong and the demand is good. No. 1 hard white shavings are quoted at $3.75 to $4.00; No. 1 soft white shirt shavings, $3.25 to $3.50; heavy books and magazines and ledgers and writings, unchanged; newspapers, $1.40; No. 1 mixed papers, $1.20; No. 1 miscellaneous, $1.15. In the rag department prices are unchanged.

NEW YORK MARKETS

New York, April 7 — (Special Correspondence)— There is a little lull in demand for some kinds of paper reported, yet the movement of supplies from mills into consuming channels shows no let up. If anything, more paper is being shipped out by manufacturers at present than at anytime during the period of activity enjoyed by the paper industry in the past few months, as mills are being speeded up and as stock is being sent to consuming centres as rapidly as it becomes available for shipment. The slowing down of demand noted in some quarters is but a natural sequence to the brisk buying of the past, and is due presumably to the fact that consumers have covered their major requirements for a while and consequently are now holding back in further buying until more in need of paper.

Paper mills are sold well ahead. Conservative opinion is that the average manufacturer in the States has sufficient orders on file to keep his plant operating at close to full capacity for at least two months; many mills have orders a good deal further ahead than this. There is therefore no lessening of the movement of supplies from producing to consuming centres, and the market is characterized by all the elements of strength and healthiness.

That paper mills in the States are working at a fast pace is shown by the Federal Trade Commission's report on the industry for February, which shows that although total production of paper in this country in that month was somewhat less than in January a greater daily output was reached in February than in the preceding month when the number of working days is taken into consideration. A total of 614,364 net tons of all kinds of paper and board was produced by domestic mills in February, compared with 664,537 net tons in January last, 501,817 net tons in February a year ago, 407,966 net tons in February two years ago, 564,500 net tons in February three years ago, 415,132 net tons in February four years ago, 453,187 net tons in February five years ago, and an average monthly output based on reports covering the past five years of 480,263 net tons. These figures show that February production of paper was by far larger than in any February in the past, and was no less than 130,000 net tons in excess of the average monthly output for the past five years.

Figuring on the basis that February had but 22 working days and January 26 working days, it is found from the Commission's figures that an average daily output of about 27,000 net tons was reached in February, against 25,000 net tons produced each day during January, thus indicating that productive activity continued on a broad scale in February and that mills succeeded in turning out relatively more paper in that month than in the first month of the new year.

Mill stocks of paper increased slightly during February. At the beginning of that month total mill stocks of paper of all kinds amounted to 253,966 net tons, contrasted with 262,734 net tons at the end of February, the latter tonnage being somewhat above the average of 230,217 net tons carried by mills over the past five years.

There is a steady demand for newsprint emanating from numerous consuming sources. Publishers are buying freely, and the movement of print paper both on contract and to transient buyers is heavy. Consumption is running large; there has been no decrease noted since the pre-Easter season, judging from the New York newspapers, which are printing just as big issues as at anytime this year thus far.

The fine paper market is steadily assuming a stronger tone. Demand for writing papers is increasing at a consistent pace, and manufacturers are constantly enlarging their output. A representative bond paper manufacturer is authority for the statement that fine paper mills are busier than they have been at any time in more than two years. Prices are inclining upward, and frequently revisions to higher levels are being made in mill quotations.

Coarse papers are in good demand though the retail call for wrapping and tissue has eased off to some extent of late. Quotations are well maintained, however, and buyers are meeting the prices named without seeming reluctance on such supplies as they want.

The board situation is not all that could be desired by manufacturers and dealers. Paper box makers are purchasing board in limited fashion, invariably confining their orders to tonnage directly required, and the aggregate movement is not as large as it was sometime ago. Moreover, competition among mills to secure business is weakening prices. One of the biggest producers of chip board in the country was reported quoting plain chip at $57.50 a ton delivered New York this week, while other mills asked $60 for this kind of board. An unusual feature in boards is that news board is quoted at the same price as chip, $60 per ton New York also being asked for this description of box board.

GROUND WOOD. — Some reports have told of a strengthening of the market for mechanical pulp, with consumers evincing increasing buying interest and with prices inclining upward. On the other hand, there have been reports of a rather slow demand for ground wood, and some low quotations have been mentioned. Under the circumstances it is rather difficult to accurately describe the market situation. It appears certain, however, that buyers are operating on a reserved scale, that they are absorbing pulp only in tonnage necessary to cover their direct needs, and that in at least certain cases they are getting supplies at attractively low prices.

Canadian grinders are reported quoting from $35 a ton upwards f.o.b. producing points, and yet it is said that the bulk of Canadian ground wood being sold in the open market is bringing at least $37.50 at pulp mills. Domestic manufacturers continue to ask around $42 a ton at producing plants, and spot shipments are reported fetching this figure freely.

CHEMICAL PULP. — Late reports by cable are to the effect that the strike in the Swedish pulp mills has been practically settled and that the lockout will be ended within a very short time. Definite confirmation of the reopening of the mills is as yet lacking, but it is understood an agreement between the manufacturers and their operatives has been reached and all that stands between the resumption of production of Swedish pulp is the presenting of this agreement to the strikers by their representatives and securing their permission to sign the pact. This encouraging news has greatly gratified the pulp import trade in New York, and it is believed here that pulp mills in the Scandinavian country will soon be humming again and that offerings of pulp from Sweden will be coming forward as usual.

Quotations on Swedish sulphite and kraft pulps are extremely firm, and the trend continues strongly upward notwithstanding that prevailing prices are far above the levels of only a comparatively short while ago. Importers in New York are quoting 3.35 and 3.40 cents a pound ex dock here on No. 1 unbleached sulphite, and up to 3.50 cents is asked in some cases, while Swedish kraft is quoted at about 3.35 cents on the dock. Foreign bleached sulphite is priced at a range of 4.50 to 5 cents per pound ex dock New York, depending on the grade, and foreign easy bleaching sulphite is quoted at 3.50 cents. Sentiment in the trade is bullish, and nearly every pulp man looks for higher prices, contending that the loss of production in Sweden during the past three months can only serve to put prices up during the coming spring.

RAGS. — There has been a little slowing down of demand for papermaking rags. Prices apparently have not been disturbed; most grades are quoted firmly on recent high levels, yet it is evident some consumers are

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absorbing supplies in smaller amounts, presumably having covered their needs for a while through recent heavy purchases. This applies especially to roofing rags. Felt paper mills seem to be buying foreign rags fairly freely but are less desirous for domestic stock, but quotations of New York dealers hold at around 1.85 cents per pound f.o.b. this city on No. 1 roofing, and 1.75 cents on No. 2 packing. New No. 1 white shirt cuttings are firmly quoted at 13.75 to 14 cents a pound at shipping points, and other grades of new cuttings are firm and proportionately as high in price as short cuttings. Old white rags are in good demand and are quoted at stiff rates, and old blues are moderately active.

PAPER STOCK. The market for old paper continues rather easy. High qualities are holding their own in price fairly well but low grades are still sliding in value and are now on lower levels than have prevailed in a long time. Those grades chiefly used by box board mills are particularly weak. No. 1 mixed paper has declined to where sales at 90 cents a hundred pounds f.o.b. New York have been noted, while folded newspapers are selling as low as 1.20 cents a pound at shipping points. Common mixed paper is down to 65 cents a hundred pounds, heavy magazines to 2.25 cents a pound, overissue newspapers to 1.40 cents per pound, old No. 1 kraft paper to 2.20 cents, and ledger stock to 2.65 cents. Shavings are moderately steady in price. Dealers continue to ask 4.25 cents on an average for good packing of hard white shavings, and around 3.65 cents per pound for No. 1 soft white shavings.

OLD ROPE AND BAGGING. — Prices of old manila rope rule steady at about 7 cents per pound at dealers' shipping points for domestic manila rope in No. 1 conditions, and foreign rope is reported to have sold to mills at this figure also in some instances though quotations on imported rope generally are around 6.75 cents or slightly less. There is a good demand for old rope, and indications are no excess supply exists. Old bagging is quiet excepting for occasional sales of small tonnage. No. 1 scrap bagging is quoted by dealers at about 1.25 cents a pound at shipping points, and roofing bagging at 1.10 cents.

DEATH OF R. F. A. RITCHIE

Toronto, April 9. Toronto paper circles were shocked yesterday on hearing of the death in St. John's, Newfoundland, of F. A. Ritchie, President of Ritchie and Ramsay, Limited, proprietors of the Ritchie and Ramsay Coated Paper Mills at New Toronto. The body reached Toronto today.

The late Mr. Ritchie left Toronto some weeks ago on a trip to South America and had to cut his visit short on account of illness. He was taken severely ill on the boat on the return trip and on reaching St. John's he was unable to continue his journey. Friends were summoned from Toronto and were with him at the end.

Deceased was widely known in the pulp and paper trade in Ontario and throughout Canada and his many friends will regret his demise.

The Detroit Sulphite Pulp and Paper Co., announce the opening of an office at 342 Madison Avenue, New York City, in charge of Mr. Theodore H. Donlan, telephone number Vanderbilt 8265.

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BOOKS FOR PAPER MAKERS

The following books will be sent, prepaid, on receipt of price, by the Pulp and Paper Magazine:

Lockwood's Directory of the Paper and Allied Trades, issued annually in September. Contains a directory of paper and pulp mills in United States and Canada, and classified lists of paper and mill products, besides addresses of paper and board merchants, twine manufacturers and wall paper printers. There is also a useful reference list of watermarks and brand names. (Lockwood Trade Journal Company, 10 East 39th Street, New York, $7.)

Phillips' Paper Trade Directory of the World, by S. Charles Phillips. Issued yearly. (S. Charles Phillips & Company, 47 Cannon Street, F. C. London.)

The Paper Mill Chemist, by Henry P. Stevens (1907). (D. Van Nostrand Company, 8 Warren Street, New York, $4.)

From Paper Mill to Pressroom, by William Bond Wheelwright (1920). (George Banta Publishing Company, Menasha, Wis., $2.)

The Recovery and Manufacture of Waste Paper, by James Strachant of the Donside Paper Company, Aberdeen, Scotland. This is a most useful and suggestive work which can be recommended to all practical paper makers. (Spon & Chamberlain, 120 Liberty Street, New York, $4.50.)

A Text Book of Papermaking, by G. F. Cross and E. J. Bevan. Fourth edition, containing additional matter, and in part rewritten with collaboration of J. F. Briggs. (Spon & Chamberlain, 120 Liberty Street, New York $9.

The Treatment of Paper for Special Purposes, by Louis Edgar Andes (1907). The processes of manufacture for a variety of paper products are outlined in this book of 239 pages. It is not a working manual, though it contains a collection of formulas and furnishes for parchment and greaseproof papers, as well as for a whole series of novelty papers. (D. Van Nostrand Company, 8 Warren Street, New York, $3.)

Manufacture of Pulp and Paper, in five volumes, edited by J. N. Stephenson. Volumes I and II deal with the sciences in their relation to the manufacture of pulp and paper. (Issued 1921.) Volume III, Preparation and Treatment of Wood Pulp. (Issued 1922.) Volume IV, in preparation. (To be issued 1923.) Preparation of rags and waste papers; beating, sizing and coloring; paper machines. Volume V, in preparation. (To be issued 1923.) Manufacture of paper and general mill equipment. (Technical Association of the Pulp and Paper Industry, 18 East 41st Street, New York, $5 per volume. McGraw-Hill Book Company, publishers.)

Modern Pulp and Paper Making, by G. S. Witham, Sr. (1920). A practical American treatise which gives particulars of every phase of papermaking from the saw mill to the finishing room. (Chemical Catalog Company, 170 Metropolitan Tower, New York, $6.)

THE SEVEN MISTAKES OF LIFE

1.—The delusion that individual advancement is made by crushing others down.

2.—The tendency to worry about things that cannot be changed or corrected.

3.—Insisting that a thing is impossible because we ourselves cannot accomplish it.

4.—Attempting to compel other persons to believe and live as we do.

5.—Neglect in developing and refining the mind by not acquiring the habit of reading fine literature.

6.—Refusing to set aside trivial preferences in order that important things may be accomplished.

7.—Failure to establish the habit of saving money. Shelton Looms Bulletin.

MR. J. R. BOOTH IS 96

J. R. Booth (founder of J. R. Booth, Ltd.)the owner of lumber and paper mills and former railroad builder, on April 5th celebrated his 96th birthday. As has been his custom always, he spent part of the day at his office and supervised works around the plant.

J. R. BOOTH

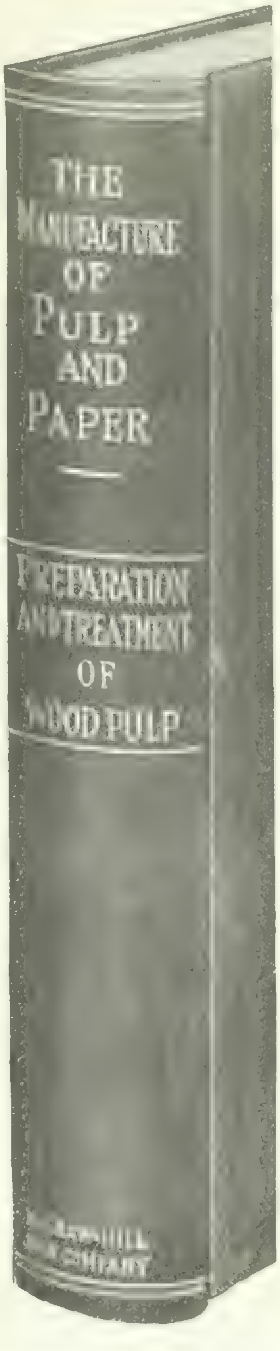
His employees presented him with a basket containing 96 roses. Mr. Booth, who is in good health, was born at Waterloo, Que., and has resided in Ottawa since 1857.

TOO MUCH INTERFERENCE

Hamilton, April 5. — Addressing the executive council of the Canadian Manufacturers' Association, who were the guests yesterday of the Hamilton members, C. Howard Smith, first vice- president, Montreal, declared that Canadian manufacturers must be given a freer hand with less Government interference, if the manufacturers were to do their share in building up Canada's export trade. He said the national debt left by the war would never be paid off by the export of natural resources only; it must be met by the export of manufactured goods. Germany would soon return to the export market.

With Great Britain, the United States were competitors with Canada in the export market. Without more population Canada could not well increase her exports. InAustralia he had found no free traders, and Australia had a higher standing for export business than Canada.

Some Canadians viewed with alarm any new association combine or organization for marketing goods, but it was almost impossible to market goods in competition with Great Britain, the United States and Germany without more trade association. British exporters were thoroughly organized. Canada's raw materials were being used by her rivals to compete with Canadian manufacturers. If the Goverment would do its share, the Canadian manufacturers would undertake their part.



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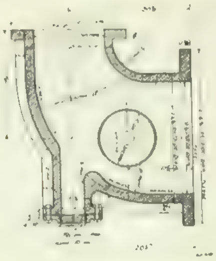

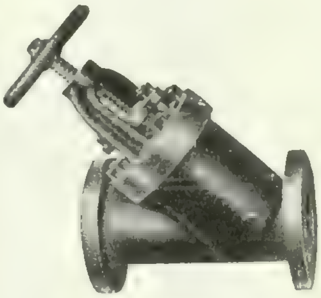

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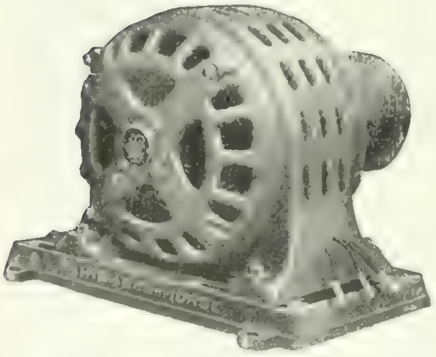

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:-: EDITORIAL :-:

IMPRESSIONS OF THE AMERICAN CONVENTION

To those who have never attended the annual convention of the American Paper and Pulp Association and allied organizations, a word of introduction may be in order. While the American Pulp and Paper Industry is a unit in many ways, it is not organized in so compact a fashion as is the Canadian industry. The American Paper and Pulp Association is the coordination of a number of independent organizations built up about the several different branches of the industry. The list, on another page, giving the new officers elected by a number of these associated bodies, will give some idea of the way in which the industry down there is organized. Many of these groups have their sectional meetings during the year in various parts of the country, but at the annual convention all come together under one roof, and this roof, for many years, has been that of the Waldorf-Astoria Hotel on Fifth Ave., between 33rd and 34th Streets. This hotel is admirably adapted to such a convention. On the main floor are the dining room, grill, lounge and corridors, where a person meets pretty nearly everybody else in the business. On the next floor are the general meeting rooms. There are two large rooms, the Astor Gallery and the Myrtle Room, and five or six others of varying size, besides a number of still smaller rooms, which serve as registration rooms and as headquarters for the various associations, while the meetings are going on simultaneously in the various meeting rooms. The person who attempts to cover adequately the meetings of the association must very nearly accomplish the impossible feat of being in several places at the same time. The various programs, however, were very nicely arranged so that persons interested in several developments or phases of the industry had an opportunity of attending most of the sessions in which they were particularly interested.

It seemed to us that the sessions were better attended this year than ever before and that there was a better discussion on the various papers and reports, that were presented at the meeting. Not only was good work commended, but criticism and suggestions were forthcoming where the members saw an opportunity of extending or improving the work that had been done. This point was a very encouraging feature for the progress of the industry. The increasing strength and importance of the Technical Association and the Woodlands Section were quite evident. On taking a list of those attending the convention, and checking the ones registered for the Technical Association, this seemed to include the majority of those attending the convention. Education was again a very important topic of discussion and much interest and satisfaction were taken in the announcement that Volume II was to be reprinted for the first time, and that Volume III of the textbooks was immediately to be reprinted a second time. Volumes I and III were reprinted last year. Reports from the University of Wisconsin and from the Institute of Industrial and Domestic Arts showed that nearly four hundred persons connected with the industry had so far enrolled in correspondence courses.

The growing appreciation of the work of the Technical Association was clearly shown by the increasing attendance of mill managers at the general meeting and the sectional meetings of the association. An encouraging growth was also shown in the Woodlands Section, both in the number attending the meeting and in the papers and discussions that were carried on. The forestry committee presented one of the finest reports that was brought in at any of the meetings, and if their suggestions are followed out, there is no doubt whatever but that the pulp and paper industry in the United States will be placed on a far better foundation as regards the supply of raw materials than it ever has been, or that it can possibly attain, without following these recommendations. The report is the conscientious work, over a considerable period of a committee sub-divided into three parts, so as to cover individually and intensively the New England States, New York State and Lake State conditions. The paper presented by Mr. Schierbeck of Price Brothers, on the "Utilization of Rotten Wood" should open the eyes of the manufacturers to the seriousness of the wood situation in this respect, and the possibility of conserving waste, and bring about a greater appreciation of the work of the forester.

One very marked impression that was made was that those attending the convention did less visiting in the corridors while meetings were being carried on, and there seemed to be less attention given at the hotel to the buying and selling of machinery and products. In other words, the atmosphere of the Waldorf was distinctly and intensely a paper and pulp atmosphere. This, we think, is a very healthy condition, and one which, no doubt, was largely due to the Paper Industries Exposition that was held at the same time at the Grand Central Palace. This furnished an opportunity not only for the discussion of equipment questions, but for the possible purchasers to examine many types of equipment and other products, and to sit down comfortably with sufficient leisure to talk the matter out, and get all points of view without being jostled or interrupted. The Exposition was well patronized, not only by manufacturers of paper and paper products, but also by the general public who must have received a liberal education in the manufacture of paper and in its manifold uses. It would not be proper for us to say that one or another exhibitor had a better display because in going the rounds of the Exposition floor several times, there was not a booth at which we did not obtain something of interest and value. The exhibitors, themselves, seemed very well satisfied with the results of the Exposition, and there is no doubt that the affair will be an annual one, and that it will be very much larger and more important next year, and in the years to follow.

There were a large number of Canadians present at the various Association meetings, and most of them were also seen at the Exposition. The Dominion Engineering Works and Canadian Ingersoll-Rand Company were represented at the Exposition, and the Institute of Industrial and Domestic Arts had a booth which was largely used by Canadian visitors as headquarters. There was an unexpectedly large demand for information regarding the correspondence courses in Pulp and Paper Manufacture.

During Convention week, there were a number of smokers and banquets and dances that provided a very attractive and interesting social aspect to the gathering. It is interesting to note that the Technical Association banquet has become so popular that the old quarters are now too congested to accommodate the members attending. The Association banquet was a brilliant affair as usual, and the speeches were unusually good. The dignified attention of the audience to the excellent speeches apparently detracted not at all from the universal enjoyment of the occasion, nor was this interfered with in any degree, by the general sobriety of the gathering. Attorney General James M. Beck and Senator Borah each made out an excellent case for the World Court, and for the legal ostracizing of war, and the audience was visibly moved by their eloquence. It seemed, however, to a great many that the excellent presentation of the case on that side as against the advisibility of the entry of the United States into the League of Nations, but served as a target for the Venerable Reverend Nehemiah Boynton who sent shot after shot into the bull's eye. The Association's chaplain argued not so much against the World Court, as for the entry of the United States into the League of Nations; and as he used smokeless powder in order that his argument might not be obscured, the audience was compelled frequently to rock with laughter at the brilliant fire of his humor. There is probably no one who addresses the Association whose talk is more eagerly anticipated than that of Dr. Boynton. We hope he will be able to address the convention for many years to come and if, perchance, it happens eventually that he is not able to attend the Convention, we trust that arrangements will be made whereby he can address the Association by radio.

There is much more that could be said about this most important function and event of the year in the pulp and paper industry, but a number of the important papers and speeches will be reproduced in the Pulp and Paper Magazine, and they will also be available in the special numbers of several of the American Paper and Pulp periodicals.

MAGAZINE WANTED

The General Engineer of the Westinghouse Electric and Manufacturing Co. wants a copy of the Pulp and Paper Magazine for March 6, 1919. Who has one?

COBWEBS

Perhaps some musical friend can tell us if it is true that the Jewish slumber song is Buy Low Baby.

Crocuses, daffodils, and golf sticks are out in New York.

We acknowledge greetings from Mr. James G. Vail, chief chemist for the Philadelphia Quartz Co., now visiting England.

The Technical Section is a confirmed believer in Couéism. The meetings are constantly better and better. On another page is a preliminary notice of the summer meeting for 1923. As usual, it will be "the best yet."

The most important article in this issue is on the next page. Read it and think; them out!

AXEL WALLENBERG, SWEDISH MINISTER TO THE UNITED STATES

"Sweden has been studying its forestry problem for 400 years," said Axel Wallenberg, Swedish Minister to the United States, at the complimentary luncheon given him last Thursday by W. J. Raybold, retiring president of the American Paper and Pulp Association. "We have such great faith in America's wonderful enterprise, that we are hoping America will be able in the next forty years to establish a forest policy that will make for a strong national sentiment in the United States such as we have in Sweden. The importance of the forest in our national life has done much to create a strong national feeling. We believe in maintaining unimpaired our forest capital, by taking no more from our forests than is replaced by the annual growth.

"We have such a strong belief in your people that we know if you lay out a forest program, you will carry it out in a way to astonish the world.

"I hope the time will come when we shall be able to have fine conferences of the pulp and paper manufacturers of all the paper producing countries. This compliment you have given us today, by having me as your guests, I hope is only a forecast of closer relations between us all."

Safety First Is Stopping Hurts

The annual meeting of the Ontario Pulp and Paper Makers' Safety Association was held in Toronto on April 3rd when the activities of the organization for the past year were gone over and discussed and various suggestions made to make the service of still greater value to the industry. President C. Nelson Gain, in his address, emphasized some of the outstanding features of accident prevention work and gave a resume of the progress that has been made during the year. This was followed by a report from the Secretary-Engineer, A. P. Costigane, which covered in detail all the work for 1922. Satisfaction was expressed at the tendency of accidents to decrease, both in frequency and severity. There was, however, one discordant note at the meeting and it should be noted by all the companies operating in Ontario, namely the lack of interest shown by the various companies in the annual meeting of the Association. It was pointed out that this meeting takes place only once a year, and it is not only desirable, but expected, that each mill in the organization will at least have one representative present. The activities of the Ontario Pulp and Paper Makers' Safety Association are of vital interest to Ontario and the directors would welcome suggestions whereby accidents may be even further controlled. Compensation costs are mounting and will mount higher in future and the only way to keep down compensation is to prevent accidents in the plants. Therefore, it was pointed out at the meeting, it stands to reason that it is in the interests of the mills themselves to show some enthusiasm in the work of the Association. At the meeting C. Nelson Gain, of the Don Valley Paper Co., Limited, Toronto, was re-elected President; H. F. E. Kent, of the Kinleith Paper Mills, Limited, Vice-President and A. P. Costigane, of Toronto, Secretary-Engineer. The following directors were re-elected George Carruthers, Interlake Tissue Mills, Company, Limited, Toronto: I. H. Weldon, Provincial Paper Mills Company, Limited, Toronto: Col. C. H. L. Jones, Spanish River Pulp and Paper Mills, Limited, Sault Ste Marie, Ont: P. J. Murer, Riordon Company, Limited, Hawkesbury, Ont.: L. R. Wilson, Abitibi Power and Paper Company, Limited, Iroquois Falls.

Winners of Trophies

At the directors' meeting immediately following the annual meeting the results of the accident prevention contest for the year amongst the Ontario pulp and paper mills were announced. These are as follows:

Class A., mills employing from 200 people up, won by the Provincial Paper Mills Co., Limited, Port Arthur with a record of 20 non-fatal accidents involving lost time of 336.5, which equals 1.75 days lost time per full-time worker. The runner-up was the Fort Frances Pulp and Paper Co., Limited, with 36 non-fatal accidents, involving 358.5 days lost time, equal to 1.88 days lost time per full-time worker.

Class B., mills employing less than 200 people, won by the Barber Division of the Provincial Paper Mills, Co., Limited at Georgetown, Ont., with a record of 3 non-fatal accidents, involving lost time of 56 days, which is equal to .875 days lost time per full-time worker. The runner-up was Miller Brothers Company, Limited, Glen Miller, Ont., with a record of 2 non-fatal accidents, involving 42 days lost time, which equals 1.17 days lost time per full-time worker. Miller Brothers have attained the position of second on the list for two years running, which is a significant record, and it would not be surprising if this firm were at the top of the list next year.

PRESIDENT'S ADDRESS

By C. N. GAIN, Don Valley Paper Co., Limited

Gentlemen: —

To avoid repetition and save time, as our Secretary has a full an detailed report of the activities of our Association, I will make my address as brief as possible.

The oustanding point of note during the year just passed are:

The very credible improvement in Accident Records.

Improvement in the interest shown in the Shield and Flag Contest.

Lack of interest shown in safety Calendars.

Mr. C. Nelson Gain,

Taking the last first I would say our Secretary and Engineer has labored faithfully and well to make these calendars what they should rightfully be, one of the outstanding features of our safety campaign.. Unfortunately enthusiasm seems to be a minus quantity.

Safety propaganda of this description which reaches not only the fathers and mothers but the children in the homes, should have the unstinted support and hearty cooperation of all who have Safety as their motto and are really at heart Safety First advocates.

The prime purpose of our association is the prevention of accidents. The question naturally arises as to who is responsible for the prevention of accidents, the easiest answer to this question is to put the responsibility on some one else, and as I see it our biggest problem is not only to place the responsibility on the individual, where it rightfully belongs, but to convince each individual that the responsibility rests fairly and squarely on his or her shoulders.

The Chairman and Secretary of your association were guests at the annual dinner meeting of the Industrial Accident Prevention Association held at the King Edward Hotel in March. This meeting was well attended very enthusiastic and the officers reported the close of a very satisfactory year.

The safety week that is proposed and is now being planned for the whole of Ontario, is certainly a worthy and sane endeavor, that we should support and strive with our might and main to make the success that it so justly deserves. It is not an experiment. Precedents prove it of real worth in the prevention of accidents and since we have given it our sanction and financial support we should get behind it and work to assure its success.

It was the Chairman's privilege to be connected with the mill that won the shield in the 1921 competition for Class B.

Mr. A. P. Costigane.

It is not going to be our fortune to retain it on the 1922 contest. However, this is not a cause of worry with us, as we consider that the best interests of the association in particular and of the paper mills in general, are benefitted by the moving from place to place of this trophy, in this way advertising the competition and bringing a greater number of mills as well as individuals in to close contact with the shield and thoughts of safety.

We will retain our flag and will always look on it with great pride.

A thought worthy of consideration would be the distributing of a button to each individual employed in the winning mill.

Finances

The total expenditures for the year 1922 were $5420.54, against $5129.18, for 1921, an increase of $300 which is explained by the increased cost of travelling to cover additional territory. This is encouraging as it shows quite a substantial increase in our membership.

Workmen's Compensation Act

While there has been considerable discussion on the floor of the house which seems to have a strong political basis, no change has been made in the operation of the Act.

The agitation for allowing lawyers to act as council should be frowned on by manufacturers as it is unnecessary and would mean that part of the compensation payment would be diverted to the payment of lawyers' fees or the assessment on manufacturers would be increased.

The manufacturers should not rest in their endeavours until they have direct representation on the board as this is a matter of vital importance to them

Accident Record

In 1921, total accidents reported 1203 as against 1502 for 1922, this at first would seem a decided increase but when we take into consideration the number of employees have increased from 6310 in 1921 to 9311 in 192, which is nearly 50% increase as against 24.8 increase in accidents we find that the lost time per employee has dropped from 3.29 in 1921 to 2.63 in 1922 or an improvement in the accident record of over 20%.

There was also a decrease of 11% in fatal accidents.

SECRETARY'S AND ENGINEER'S REPORT

By A. P. COSTIGANE

Mr. President and Gentlemen,

The year 1922 marked the end of the slump in the pulp and paper industry in Canada, and the beginning of an upward movement in volume of business and prices. This favorable movement still continues with the result that most mills (especially newsprint mills) are producing to full capacity. Expansion in operations followed closely on the improved situation and paper machinery manufacturers became busy in supplying the demands of the paper industry for additional machinery designed to produce paper at the maximum speed and minimum cost. During this period some new mills came into operation for the first time and some small mills which had been shut down during the depression, again became producers.

Accident prevention during the depression period suffered a set back due to the curtailing of staffs and the dispensing with the services of employees interested in the movement. That unfortunate situation is now gradually being remedied and accident prevention is again in many cases receiving the managerial attention it deserves. In this connection favorable reference should be made to the activities of the Spanish River Pulp and Paper Mills, Limited, who have completed and put in operation a permanent safety system. Intensive campaigns were carried on in all their mills during the months of October, November and December, and resulted in average reduction for the three mills, or 31 per cent in the frequency and 59 per cent in the severity rates. These results are most encouraging and go far to prove that accident prevention organizing is well worth while.

Accident Record Competitions

The presentation of the Shields and Flags to the winners of the accident record competition for the year 1921 took place during 1922. In the case of the Don Valley Mills who were the winners in Class B, the presentation was made at a meeting of employees held at the mill. Satisfaction was expressed by the Superintendent, Mr. Mackenzie on behalf of the employees who in a short address declared that a united effort would be exerted to retain the shield in their possession. The meeting at the Dryden Paper Company, Limited, who were the winners in Class A took the form of a smoker and card party held in the town hall. The meeting was attended by about 200 employees, who were enthusiastic over their success in winning the shield and flag. During an interval in the program Mr. J. B. Beveridge, Vice-President and General Manager of the Company gave an address expressing the pleasure of the Company that the employees had beaten all other mills in their class, for the possession of the shield and flag. The presentation was made by your Secretary-Engineer who gave a short address on the economic aspect of accident prevention; and the trophies were received by a popularly elected representative of the employees who contributed a stirring appeal to all his fellow employees to put forth every effort to retain possession of the shield they had won.

Organization Meetings

Organization meetings were held at Espanola and Fort Frances. The former meeting composed jointly of employees representing the three mills of the Company and certain executive officers, was called for the purpose of laying plans for the formation of a permanent safety system, to deal with everything pertaining to accident prevention by education, guarding machinery, sanitation and the investigation of all accidents, etc. Such an organization is now in operation, a secretary of safety having been appointed for each mill and regular meetings have been held from time to time. Considerable reduction in the number and severity of accidents has already been effected and it is hoped even greater reductions will be shown during the year 1923.

The meeting at Fort Frances was attended by executive officers of the Company to confer with your Secretary and Engineer with the object in view of establishing an organization most suited to the conditions in the plant. A full discussion took place during which everyone present contributed, resulting in the formation of plans applicable to both the Canadian and American plants. A series of meetings of employees have since been held at which special safety films have been shown. These meetings have been largely attended and should do much to foster the spirit of carefulness among the employees.

Meetings Attended

The following meetings were attended by your Secretary-Engineer during the year:—

(1) Annual and summer meetings of Technical Section of the Canadian Pulp and Paper Association.

(2) Various meetings of Committee on Vocational Education.

(3) Various meetings of Executive committee, Ontario Safety League.

(4) Various meetings of Industrial Relations Association.

(5) Annual convention, National Safety Council in Detroit.

Workmen's Compensation Act

No amendments have been made to the Ontario Act during the year. (See President's Address.)

Accidents

The total number of accidents compensatable and non-compensatable for the year 1922 is 1,502 exclusive of 8 fatal accidents, involving lost time amounting to 24,511.5 days, compared with 1,203 non-fatal and 9 fatal accidents during 1921, with lost time of 20,759.5 days. These figures show an increase of 24.8 per cent in non-fatal accidents and a decrease of 11.1 per cent in fatal accidents. During the same period the total number of employees increased from 6,310 to 9,311 or 47.5 per cent. Time lost per employee has dropped from 3.29 days in 1921 to 2.63 days in 1922, or 20.06 per cent.

These figures are satisfactory in so far as they show a 20 per cent decrease in time lost per employee, but the improvement is not so great as was looked for.

An analysis of above figures shows the following, as outstanding causes of accident. Loading and unloading 123 or 8.1 per cent of the total; lifting and carrying 116 or 7.6 per cent; hand tools 100 or 6.6 per cent; Picks and hooks 89 or 5.9 per cent; Trucking 77 or 5.1 per cent; Winders 74 or 4.9 per cent; Blockpile 73 or 4.8 per cent; Slipping and tripping 69 or 4.5 per cent; Grinders 51 or 3.3 per cent. These 9 causes taken together constitute 50.8 per cent of all accidents in the industry. If special efforts were made to control these causes a reduction in accidents might be brought about which would be well worth while.

Attached to this report is a chart covering the years 1917 to 1922 inclusive. This chart shows in figures, in percentage, and in block, the parts of the body affected, together with a list of fatal accidents and a summary showing the total number of employees, total time lost and time lost per employee.

Finance

An audited statement of receipts and disbursements for the year 1922, shows the total cost of running the affairs of the Association amounted to $5,420.54 as compared with $5,129.18, an increase of $300. This increase is due to additional travelling expenses visiting new mills.

Safety Calender

This Association did not produce a Safety Calender for 1922 owing to the limited orders for copies received from the mills the year previous. The circulation was so small that the money received from the sale of copies did not cover the cost of production. In order that the interest shown by some mills in this method of publicity, copies of a calender issued by the Industrial Accident Prevention Association were purchased and distributed among the mills desiring to present copies to their employees. The total number of copies sold to the mills in Ontario was 1,260. In view of the fact that there are approximately 9,000 people employed, the number receiving copies of the calender only represented 14 per cent of the total. It is to be deplored that greater support of the calenders is not forthcoming, as the writer knows how much they are appreciated by the employees and the good they do in the home circle.

Correspondence

Outgoing letters to the number of 1,450 (and increase of 11.4 per cent) have been handled through the office of the Association during the year, dealing with accident reports, statistics, inspection reports and general correspondence. This correspondence has been conducted at the cost of $460.00 for clerical assistance, an average of $38.00 per month.

General

Development in public and industrial accident prevention goes on apace under the management of the Joint Safety Committee which is composed of representatives of all the Accident Prevention Associations incorporated under the Ontario Workmen's Compensation Act with the addition of representatives of the Canadian Manufacturers' Association, Workmen's Compensation Board and the Ontario Safety League. Last year a two days' convention was held which proved very successful indeed, both in regard to the members in attendance and the papers presented at the various sessions. This year the intention is to organize a Safety Week throughout the whole Province. It is recommended that the Safety Week Campaign be divided among the organizations interested in such a manner as to take care of the various features without overlapping, including the following:

(a) Safety in the homes.
(b) Safety on the streets and highways.
(c) Safety at school.
(d) Safety in industry.

The general direction of the campaign would fall under the Executive Committee assisted by the following sub-committees:—

(a) Finance Committee.
(b) Publicity Committee.
(c) Speakers Committee.
(d) Organization Committee.
(e) Schools Committee.
(f) Women's Committee.
(g) Industrial Committee.

The idea underlying the proposed Safety Week campaign is to arouse interest and co-operation over a larger area than is possible by a convention held in one city, and the knowledge that any campaign of such a nature is bound to affect beneficially all industries in the Province. The method of working through local committees will be adopted so as to have as many people as possible all over the Province actively interested in the success of the movement.

CAUSES OF ACCIDENTS, 1922

Machinery and Its Parts

Caught in gears	08
Cleaning and Oiling Machinery	21
Barkers	27
Calenders	36
Winders	74
Conveyors	47
Belts, Pulleys, Shafting	28
Inrunning Rolls, exclusive of calenders	17
Machine Tools	29
Slitters	1
Splitters	12
Saws	27
Repairing Machinery	49
Cutters	14
Chipper	14
Moving Machinery	12
Beaters	9
Dryers	11
Putting on Felts	13
Screens	17
Grinder	51
Pumps	01

Hoisting Apparatus

Elevators	05
Tackle	11

Nails

Upturned	40

Steam, Water and Liquor

Scalding Water	10
Escaping Steam	07
Flames	05
Hot Liquor	07
Hot Ashes	12
Soda Ash	06
Hot Metal	05
Gas and Acid	37

Electricity

Short Circuit	08
Blown fuses	01

Handling Material

Loading and unloading	123
Lifting and Carrying	116
Trucking	77
Block Pile	73
Rolls of paper	42

Handling Tools

Hand Tools	100
Edge Tools	11
Picks and Hooks	89

Slipping, Stumbling, Etc.

Slipping, tripping on floor	69
Falls from scaffold	38
Falls down stairs	15
Stepping into hole	12
Jumping into broke car	01

Engine Fly Wheel

Flying pieces	02

Foreign Matter In Eye

Dust (emery, etc.)	14
Steel chippings	08

Miscellaneous

Kicked by horse	10
Struck by shunting train or car	08
Struck by street car	01
Unclassified	29
Total	1,510

The Combustion Engineering Corporation, Ltd. and the Uehling Instrument Company have recently entered into an agreement whereby Uehling interests in the Dominion of Canada and Newfoundland will be handled exclusively by the Combustion Engineering Corporation, Ltd. with principal offices located in Toronto, Montreal, Winnipeg and Vancouver. The Uehling line includes such fuel economy equipment as CO_2 Recorders, SO_2 Recorders, Draft Iecorders, Combined Barometer and Vacuum Recorders., Absolute Pressure Indicators, etc.

Canadians visiting England during the first three weeks of September should attend the shipping, Engineering & Machinery Exhibition at Olympia, London.

The Canadian Export Paper Co. announce the removal of their office to the Canada Cement Building, Phillips Square, Montreal. All letters should be addressed to P. O. Box 1470, Montreal.

Returning Prosperity in the Paper Industry

Bulletin of the American Paper and Pulp Association

The revival of prosperity in the general business of the country is gradually being reflected in the paper industry. The paper business was late in feeling the beginning of the depression, and has been late in feeling the full benefits of the improvement in business

The year 1922 was almost a record year from the standpoint of tonnage of paper produced. Starting with business at nearly low ebb, it was several months before business really began to acquire momentum. The production during the last six months, in spite of low production during the early months, was such as to make the year's total production considerably over any previous record, with the single exception of 1920. The rate of production in the early weeks of 1923 has been at least up to the figures of the latter part of 1922.

The general situation is not free from its dangers, despite the optimism being felt in many large industries. Business conditions have changed rapidly which justifies a belief that present conditions may not be permanent. Every symptom at this time is that the country is at about the same general level as before the inflation of 1920. If the present period of good business is to be followed by a period of inflation, a reaction will be certain.

However, the most conservative economists believe that the country is now upon a basis at which **there is no inflation,** but a maximum of good business, with employment general at good wages. The increase in costs so far have been in labor and material and not in additional profits to producers. Inflation begins when prices are increased to make unreasonable profits. The bitter experiences of the reaction in 1921 would seem to be too fresh in the minds of manufacturers to make inflation an imminent danger.

And yet, with general business conditions constantly growing brighter, it is a question if the conservatism of the paper industry will serve to hold prices to present levels, because a buyer's market in other lines will still further increase wages and costs of raw materials which will be reflected in a still higher level of costs for manufactured paper. Even the most conservative paper manufacturer cannot continue to sell paper at a loss in a period of generally good business, much as he may wish to do his share to maintain an equable level of general business.

Both raw material and labor have been playing an increasingly important role in the change of the basic conditions affecting the paper industry. Labor costs are rising; in fact, they have nearly reached the highest wage scale ever paid in the paper industry. Raw materials have been increasing in price rapidly.

Paper stocks is bringing unprecedentedly high prices owing to the shortage of paper, due to failure to accumulate paper stock when markets were low. The high prices are bringing the housewife into the market with waste paper, so that while prices are high there has been paper stock coming forward in sufficient quantities to meet requirements.

The same conditions have prevailed in the rag market. The average man hardly appreciates that the nation's consumption of rags for conversion into fine paper runs into the millions of dollars annually. The census of 1919, for instance, to quote government rather than privately collected figures, shows that the paper mills of the country in that year paid $24,217,978 for rags, and the waste paper purchased by the industry costs in the neighborhood of $50,000,000 a year.

The result of the high prices in casein is a good example of the situation. Casein is now selling at a price more than double that of a year ago. This increase in the cost of casein means an added cost to the manufacturer for every pound of coated paper produced.

The rise in pulp prices has had its very definite effect on the domestic production of both mechanical and chemical pulps. Bleached sulphite mills are operating at normal capacity production, with unbleached mills at 80 per cent. A comparison of the price quotations for mechanical pulp during 1922 shows that prices rose during the last six months of 1922 to a peak in January of 1923, with the same true in a general degree in bleached sulphite and kraft. Imports of all grades of pulp increased during the year until mid-summer, then fell off for a month or two, but greatly increased again in the latter months of the year.

Pulpwood is now relatively plentiful and at fair prices, as compared with the peak prices of the past. March 1st reports, however, just being compiled, indicate that the mills have faced an average increase of about 10 per cent. in the cost of wood for which they have contracted for the next year.

The relation of the strike in the Swedish pulp mills to the American industry is not so serious as many, particularly the importers, have intimated. It has had a decided effect, however, on the American pulp production. As the strike continued, the Swedish exports of pulp practically ceased. The result, however, was not a shortage of pulp as the withdrawal of the import tonnage made it possible for American pulp mills to resume production. The low prices of foreign pulp had caused some of the domestic mills to reduce production. Some domestic manufacturers even found it cheaper to buy imported pulp than to produce pulp in their own plants. The withdrawal of the Swedish supply, due to the strike, has brought domestic pulp into the domestic market once more, at prices which make it possible for the domestic mills to operate.

The latest word from Sweden indicates that the strike is over and that Swedish mills will soon again be in normal operation

At present, general production of paper is in the neighborhood of 10 to 20 per cent. above a reasonable normal for the industry as a whole. Writing paper is only slightly below the general figure for the industry as a whole.

Newsprint in 1922 was only 4 per cent. below the previous high record of 1920, but including Canada, all records for America were exceeded.

In wrapping and tissue, even the 1920 record was outstripped by the production of 1922.

With the rapid change of conditions in general business, the paper industry is suffering more than other industries from the effects of rising costs. Costs have risen faster than prices of the manufactured product. Every possible effort is being made by paper manufacturers to keep costs down, but this increase is largely beyond their control.

The historic conservatism of paper manufacturers and their determination to avoid even a semblance of inflation will prevent any attempt to take advantage of the rising tide of business to radically increase prices. It is because of the belief that such increases, if followed in all basic industries, would be harmful to general business, rather than beneficial, that the prices have remained so far at reasonable levels.

This review of the situation indicates the necessity, considering the state of general business, for the paper industry as a whole to keep its head in good times as well as it did in bad. A real conservatism should and will be exercised. If this course is followed by the leaders of business and labor it is fair to assume that business will continue good for months to come, if not for the entire year. The officers, of the American Paper & Pulp Association sincerely hope that this will be the case.

MR. KAYE WRITES ABOUT RUBBER LATEX

Inasmuch as this article by Messrs. Shaw and Bicking was printed also in the Pulp and Paper Magazine, we consider it only fair to quote Mr. Kaye's letter to the Paper Trade Journal.—Ed.

London Wall, E. C. 2, February 1,1923.

Editor, Paper Trade Journal:

In your issue of December 28, 1922, you published an article "Rubber Latex in Paper" by Messrs. M. B. Shaw & G. W. Bicking, Bureau of Standards, Washington, D. C., about which I beg to express some opinions. I was much surprised to find this article in the paper trade journals of England and of the United States of America because the character of it demanded that in all fairness it ought to have been put before me for my judgment and criticism before it was broadcasted so widely.

The Bureau of Foreign and Domestic Commerce, Washington, have for quite a considerable time taken great interest in my process for the use of rubber latex in papermaking, and I have repeatedly supplied them with ranges of samples, literature and shipped to them many months ago about 500 gallons of rubber latex for distribution by them to the paper mills of the United States.

I have been surprised at not having received from them any letter setting out in what condition the latex reached the various mills and what were the results achieved by the papermakers of different grades of paper. I have heard indirectly that in some cases the latex reached the mills in an unsatisfactory condition. If this was generally so it needs some explanation because about 700 gallons of the same shipment of latex used in many British mills was found to be in perfect condition with the exception of two or three small tins which had been damaged in transit. If there was an extensive deterioration of the latex supplied to the Bureau of Commerce it looks as if it had been extensively examined in passing through the United States. I expect that all liquid in sealed drums is suspect by the local officials.

On careful examination of the paper published by Messrs. Shaw and Bicking, I have come to the conclusion that they were working with inferior latex or else there were some factors as to quality of size or as to purity of water which were unsatisfactory. They complain that the couch and press rolls became sticky when running stock containing 2 per cent rubber. This sticky material on analysis, contained 60.5 per cent of substances soluble in acetone and 11.5 per cent soluble in chloroform. The acetone soluble component being resins and the chloroform soluble being probably rubber. Now as "Hevea" rubber, from the latex used, only contains about 3 per cent of resins to the weight of dried rubber it follows that what was thrown out upon the rolls was very largely from the rosin size and not from the latex. This shows the need for a careful study by the papermaker of the condition of the stock relative to the retention of the rosin size. I believe it is well known that difficulties can arise with size even when latex is not used.

It is stated that "paper containing latex after being made and standing a few days had an odor which would be objectionable to users of paper." This statement reveals the fact that the latex used was deteriorated or else there was some other objectionable condition in the material and the process of papermaking in the Bureau of Standards.

I will strongly set against the above assertion the fact that large quantities of latex paper, much of it of the highest commercial qualities of paper, are now being manufactured in many of the finest mills in Britain and none of this paper has any objectionable odor but is able to challenge the highest grades as to purity, brightness and clearness of texture. The conclusions put down by the writers that "the test data seems to indicate a slight increase of bursting strength on bookpaper, the variation of the other strength qualities seem to be within that of testing of different runs" is not in conformity with the results I have obtained in comparison experiments in many mills for many different papers with and without latex as well as to results obtained by many papermakers in Britain and abroad.

This week I have heard from a mill in Finland where the latex paper had a folding number threefold and fourfold that of paper without latex. A mill in Holland reports that the folding number increased by twice that of the same paper without latex.

With regard to figures sent out from the Bureau of Standards experiments that there was no increase in the amount of china clay retained, my figures from repeated experiments are opposed to this, for example. I was recently in Holland when an expriment in a mill there showed that while the ash content of a printing paper without latex was 19 per cent the same paper with latex had an ash content of 25 per cent.

I may say that excellent art papers with latex are being made in England which promise to have a very big sale as the highest quality of printing and lithographic work can be improved on these papers.

While I beg to repeat that many grades of latex paper are being made on a big commercial scale in Britain there are extensive experiments and developments going forward in all papermaking countries of Europe. The papermakers of Scandinavia whose repute is high are achieving splendid results which will have a far reaching effect.

Yours faithfully

FREDERICK KAYE,

Technical Director Kaye's Rubber Latex Process, Ltd.

Proceedings of the Technical Section

DISCUSSION OF PAPERS

(Continued from last issue)

TRACTOR OPERATION

Before the meeting was called together for the afternoon session on Thursday, Jan. 25th, an interesting film exhibition of tractor operation was given by courtesy of Mussons Limited, Montreal, and the Lynn Tractor Company.

STEAM UTILISATION IN A MODERN NEWSPRINT MILL

MR. BRYANT: Gentlemen, we have on the program for this afternoon a most interesting paper and one of a great deal of importance. Mr. Slater and Mr. Warner have both contributed a great deal to our knowledge of drying and we are extremely glad that they have consented to give their paper before this Section. I shall call upon Mr. Warner.

MR. J. E. A. WARNER: Mr. Chairman and Members of the Technical Section:

The original purpose of this paper was to determine for ourselves, the actual number of B. t. u.'s we were using in our operations, i.e., the quantity and quality of steam required for driving, drying and ventilation, and this is the result of our investigation.

(Paper entitled "Steam Utilisation in a Modern Newsprint Mill was printed in the Pulp and Paper Magazine, Feb. 1, 1923.)

There is just one thing I would like to add and that is that Mr. Slater wished me to express his regret that on account of being ill he is unable to be here to-day.

MR. BRYANT: We thank both Mr. Warner and Mr. Slater for this excellent paper. I will ask Mr. Wardle to lead the discussion of the paper.

MR. WARDLE: What little I have been able to prepare deals only with one phase of the paper Mr. Warner has read, and that is the use of steam in the drier section. It is not a guide to the discussion, and I think it would be well to call on some one else, if there are any other views to be expressed, and then I would like to have a few minutes on that subject.

MR. MOSHER: The work undertaken by the Belgo Paper Company has been mostly elementary but there are one or two points on which I would like to hear some discussion.

As you know, on most machines there is uneven drying in the driers and in general they dry better on the back side. To compensate for this and also for convenience in operating, the machine tenders load the presses heavier on the back side and regulate the weights on the front side only. This results in the sheet going into the driers at a much lower moisture content on the back side, and must also result in uneven wear on rolls, felts and bearings.

It may be that steam admission solely from the back side has its effects. As a matter of experiment, one of the paper machinery firms has experimented with a pipe leading from the steam main at the back, through the centre of the drier, supported on the opposite trunion and having a bend so that the effect would be the same as steam admission from the front side; but this did not prove a success on account of difficulties in regard to lubrication.

I would like to hear from anybody who has had this experience with uneven drying in the driers and also any suggestions how to remedy it.

There is something else I would like to say and that is with regard to humidity. Mr. Slater, in determining the efficiency of the driers as obtained from the air, obtained the capacity of the exhaust fan, I presume, by dividing the stack into various compartments.

MR. WARNER: The stack was divided into twenty-four cross sections.

MR. MOSHER: Did you have only one stack?

MR. WARNER: No, there were three stacks.

MR. MOSHER: If you have three stacks it is a comparatively easy matter. When you have only one stack there seems to be quite a difficulty in obtaining the capacity of the fan especially when the fan blades are so arranged that you may vary the capacity of the fan. We carried on some tests to establish the air currents entering the machine. It seems that all the air entering the machine enters on the front side. At the back side there is a swift current which goes toward the machine, but close to the machine takes an upward course and goes clear of the hood, so that very little air enters on the back side of the machine. We determined the air currents by means of dandelion fluff and streamers and the humidity was measured by means of wet and dry bulb thermometers, and then by determining the humidity of the air entering the machine and the humidity of the air leaving the machine and by substracting the two we obtained the grains of moisture picked up by one pound of air in passing through the driers. We ascertained how much moisture was absorbed by taking a test of the sheet entering the driers and a test on the sheet leaving the driers, the test being taken on the front, middle and back of the sheet. From this we obtained the number of pounds or cubic feet of air which would have to be exhausted under the given humidity conditions to carry this amount of moisture. This reduced to cubic feet per minute was taken as the capacity of the fan.

I would like to ask Mr. Warner a question in regard to how he obtained the chart on evaporation in the driers. We had that experiment all ready to perform but somehow we did not go on with it as yet. We had air tight cans, padded with felt, having a hole in the top of each and intended taking samples at different places in the driers, beginning at the wet end, putting the paper samples in the cans and noting the temperature of the paper. This temperature ought to be the temperature at which the water evaporates in the driers and this seems to be considerably lower than the boiling point of water, somewhere around 170 deg. F., I believe.

Another interesting point which we might take up is that of dividing the driers into sections in order to get a temperature gradient. In connection with this, it may be interesting to note that with ordinary steam admission we have results of a test on a machine on which we actually had a vacuum in the driers at the wet end. This was determined by three angle thermometers, one in a wet end drier, one in a centre drier and one in a drier at the dry end. The temperatures were noted for several days and from these we found that with a five pound pressure on the last drier the pressure or rather the vacuum corresponding to the temperature on the wet end was about 1½ inches of mercury.

MR. WARNER: What you would like to know is the method we adopted in getting the temperatures from the drier sections.

MR. MOSHER: Yes.

MR. WARNER: Well Mr. Jentz who made that test is here.

MR. JENTZ: For the purpose of obtaining these temperatures of the driers, we placed a maximum indicating thermometer in a small shallow box, open at one side and that side so shaped as to conform to the surface of the drier drum. The bulb of the thermometer was so placed as to come very close to the face of the drier without actually coming in contact with it. This was allowed to run on the drier for five minutes in order to make sure that the maximum temperature was reached. We have never claimed that we got the absolutely true skin temperature of the drier surface, for we know that there is a slight temperature drop between the surface and the thermometer bulb, but I think for purposes of comparison the results are very nearly correct.

MR. MOSHER: As you obtained the temperature of the drier, did you note the temperature of the sheet or the drier?

MR. JENTZ: The temperature of the drier itself was taken.

MR. J. E. A. WARNER: The question of a standard in this connection is well worthy of serious consideration.

These quantities were determined by taking the temperature gradient throughout the driers, and also by testing samples of the sheet, taken at equal intervals, for moisture content. In this way, it was possible to determine the quantity of water evaporation per pound of dried paper, and the corresponding temperature of evaporation, for each increment of travel. The summation of the latent heat, and the heat of the liquid for each of these increments, giving the total heat required to evaporate the water from one pound of paper. It is interesting to note that had the evaporation been assumed to have taken place at 212 deg. F., the theoretical heat so determined would have differed from that as given in this paper by less than 2 per cent. Therefore, even though the temperatures were not correct by a few degrees, their influence on the final result would be very small.

MR. MacNAUGHTON: I think that Mr. Slater and Mr. Warner are to be congratulated on the very extensive and complete study which they have made of this problem in paper manufacturing. I have followed it with extreme in terest and I would say that this study will serve as a basis for other engineers in the industry to check up the operation of paper machines with a resulting increase of efficiency in the utilisation of steam. I was interested in checking over the figures the paper carried, more with the idea of comparing them with those given by concerns which exploit steam distribution systems and emphasising the economy resulting from their use. As we know, the steam distribution men frequently claim as low as two and a half pounds of steam to dry a pound of paper, having regard of course to a particular character of paper. I was particularly interested in noting the results which were obtained under the very favourable conditions of the summertime with an outside temperature of 83½ degrees and when no heat was necessary. The drying of paper was done at the rate of 3.11 pounds of steam per pound of paper and on the basis of 1.4 pounds of steam per pound of water evaporated. It would seem that this study, done under such careful conditions, would serve as a basis or standard by which to check up these concerns who may be rather optimistic or enthusiastic as to the value of their apparatus. If the mill operator has a means of measuring the steam supplied to the paper machines and of accurately determining the product and if he finds that the steam consumption is more than 3.11, it is up to the engineers to find where the steam goes, whether it goes into the condenser or whether it is carried out in the ventilating air.

I am also interested in the degree to which this paper shows the theoretical amount of steam or heat units necessary to evaporate water on the paper machine or to dry paper. That checks against the other. This calculation shows that theoretically we require 1083 heat units to evaporate a pound of water. If calculated to pounds of steam, under the conditions indicated in this paper, the result would be that the theoretical pounds of steam required to dry a pound of paper under the conditions given would be 2.51 without allowing any steam for necessary heating or ventilation. That addition is something which you must make, in order to arrive at the net theoretical pounds of steam required to dry a pound of paper under certain moisture conditions or more particularly the net pounds of steam required to evaporate a pound of water. In some of the mills — I have not heard so much of it in regard to the newsprint mills—but in the United States mills that make the higher grades of paper like writing papers, a very common factor used by engineers is the pounds of paper dried per square foot of drying surface per hour. According to the figures in this paper it would be shown that the quantity of paper per square foot per hour, based on the total drying surface, would be .65 lbs., and if calculated on the effective drying surface 1.2 lbs. That is a figure which, I think, is of no value at all except as comparing the productive capacity of different machines working on the same grade of paper. The whole problem covered by this paper is such a broad one that I can well understand why those discussing it must limit themselves to one phase of it as Mr. Wardle has indicated he intends to do.

MR. F. C. FARNSWORTH: I have a few words to say on the drying situation. The Technical Association in the United States are getting up a formula for measuring the amount of steam required to dry paper; in fact, we are putting in a number of machines with a drying system and they have asked me to give them all the information available on the tests that are run from time to time in connection with the installation of these machines. I think you all know about the things that enter into these calculations with respect to drying. It is practically impossible for any one man, in my opinion, to get an exact method or formula for drying paper. That is my opinion; of course, it may not be the opinion of others that the weather conditions enter into it or that slowness and freeness of stock enters into it. I have seen the gauge go up ten pounds when the stock was going slow. The machine tender explained that when the stock runs slow the pressure and the consumption of steam went up almost correspondingly. The condition of the groundwood has an effect on drying, i.e., whether it is ground fine or not. Then, there comes in the question of the condition of your felts. Yesterday, in a very interesting paper on felts, it was plainly pointed out that the age of a felt affects its drying power. Wet spots will change the drying conditions and use a lot more steam. You will see two paper machines side by side with apparently everything the same although one machine may have been built a little later than the other and, on account of slight difference in drier condition, one requiring a little more steam than the other. Oil may be going through and that is a great non-conductor of heat. It is a factor you have to take into consideration if you are going to arrive at the method of determining the amount of steam required to dry at high speed. I have watched a machine running at 600 feet and then have seen it speeded up to 700 feet; there was always the same percentage of increase of pressure and steam required to get that additional 100 feet. Of course, the air and water in the dryers are a factor. Of course, you have to judge as to the temperature of the driers and follow that right back into the power house. There are so many angles that it is impossible for me to arrive at any conclusion on drying and yet there are a dozen mills I could name running tests and obtaining as much data as they can on this question. After they get it they seem to more or less drop it. They are satisfied that conditions vary from one day to another and while they may know the conditions with regard to the particular sheet they are running to-day, those conditions change and tomorrow they do not know the conditions, or reason why more or less steam is used. My conclusions are that we have to work out a device for metering water, and have a reading every day of the amount of water or steam that has been used and this is got by weighing the condensate. That is the best method of getting the weight of steam per lb. of paper and the amount of steam that is actually used; by this method you are about as close to it as is possible to get. I hope the Technical Association in the United States will finally work that out while they have started a very elaborate program. I feel there are still about twenty other things that it is going to take some paper mill and some paper mill man, and engineer with a pretty good knowledge of papermaking, to work out to completion.

MR. MacNAUGHTON: In the table itself I note that whereas the pound of steam used per pound of paper is given as 3.11, or 6,220 for a ton of paper, in the chart during June and July when no heating steam was used, the consumption of manufacturing steam is shown to be close to 8,700 pounds. If the manufacturing steam did not include cooking pulp and heating, it would indicate to me that there is a big waste of steam some place. Whether it is in the atmospheric relief during shut downs, or due to some other cause, I cannot tell.

MR. J. E. A. WARNER: This apparent discrepancy can be explained by the fact that the production, as figured for the test, includes all paper dried by the machine, whereas in Fig. 6, the actual production sold is the basis considered. Fig. 6, therefore, will be higher per ton, on account of losses due to trim, breaks, and wash-ups.

MR. STEPHENSON: Should that discrepancy be higher in summer than in winter?

MR. WARNER: I do not think so.

MR. STEPHENSON: Take the difference between the heating steam and the manufacturing steam, substract the heating steam and apparently there is not the drop in the manufacturing steam that there should be.

MR. J. E. A. WARNER: The heating steam as shown by Fig. 6, is in addition to the manufacturing steam. For ideal conditions, manufacturing steam should be a straight line throughout the year. The quantity of steam required to condition the machine room air is of great importance, for it is not uncommon to find plants which, in winter, charge to manufacturing, considerable additional steam which rightly belongs to the heating load. This tendency is shown in Fig. 6.

If the air is so conditioned, before it enters the machine room, that its condition is the same in winter as in summer, and neglecting the slight influence of the colder stock, why should your dryers operate in a different manner for the two seasons?

MR. WARDLE: The part that I would like to put the most emphasis on is the subject towards which the discussion is rather drifting, that is, the use of steam in the dryer section.

The subject of drying of paper should receive more attention from paper manufacturers than it has up to the present time. It is of greater importance to mills making greater tonnage, but the small mill can no longer afford to disregard the problem. There are probably very few mills that dry their paper at an average total cost of less than $5.60 per ton (4 lbs. of steam per lb. of paper at $0.70 per 1000 lbs. of steam) and it would probably not be hard to find many cases where mills are paying double this price without even knowing it. In fact there are relatively few mills that really know their actual costs and of those that know fewer still know how and why. As Mr. Slater puts it, "the time has arrived when each B. T. U. used in the process must, if possible, be accounted for." Obviously the problem is to find out how many heat units are actually used in the dryers and where the balance goes so that the results can be compared with those from other machines making similar grades of paper.

Among the principal causes of high drying cost are (1) inefficient pressing, (2) improper or inadequate apparatus for removing water from dryers (3) wasteful ventilation methods.

There are so many variables involved that to determine all of them accurately a rather formidable corps of experts and considerable expensive apparatus would be required. It is therefore evident that manufacturers will be most interested if a reasonably simple test code can be drawn up which will give approximately accurate results and which can be followed with a minimum of expense.

Such a code should be applicable to all types of machines making the various grades such as tissue, writing, book, newsprint and cardboard or wrapper, but for the purpose of discussion and getting started, the code herein outlined has been made up with a view mainly toward machines making newsprint.

In order to simplify matters as much as possible only those items that have a direct bearing on the B. T. U's absorbed by the dryers have been considered. It is necessary, for the purpose of enabling a comparison of tests, that results be stated in B. T. U's absorbed by the dryers per lb. of water removed from the sheet. For instance in tests on a 124" machine and a 100" machine the results in each case happen to show 2.72 lbs. of steam used per pound of paper dried during the test run, but in the first case the sheet entering the dryers was 28.4 per cent bone dry and in the second 30 per cent. The true comparison is found in B. T. U's per lb. of water evaporated 1207 and 1290 respectively.

If a machine is equipped with accurate meters for measuring the steam supplied or condensate removed a fair idea of the relative performance of the machine may be had from day to day, i.e. if the meters show an excessive steam consumption it is generally due either to lighter pressing or steam wasted from the outlet of the dryers. It is sometimes assumed that ordinary pressure gauges will at least give an idea of how much steam is being used in dryers but as a matter of fact about all they should be used for is to show either when a dangerous pressure is reached or whether there is any pressure at all. The best indication of dryer performance that the paper maker has to-day is an accurate recording steam or condensate flow meter conveniently located. With the aid of an easily made chart giving the pounds of paper made per hour for various machine speeds and widths of dried sheet he can immediately see whether the presses and steam control apparatus are functioning properly or not. The accounting department can also make good use of the meter charts in ascertaining the proper amount to be charged to the machine for steam consumed.

Efficient operation of the presses is an important factor if the use of steam is to be kept at a minimum. Even at the low figure of 65c per 1000 lbs. the steam that will be required to dry paper containing 75 per cent. of moisture as against 70 per cent. of moisture amounts to $1.12 per ton of paper or roughly $17,000.00 per year on a machine making only 50 tons per day. Although the cost of drying varies inversely with the degree of pressing the problem of pressing should be regarded as entirely separate from that of drying, and it is, therefore, suggested that the proposed code might omit any detailed data with regard to the presses such as crown of rolls. The ventilation of a machine room should also be regarded as a separate problem so far as the proposed code is concerned. There is no reason why a code should necessarily be burdened with any other air data than air conditions immediately before and after the machine.

It is probably unnecessary to point out that it is very difficult if not impossible to get precise data as to the amounts of air supplied and removed from paper machine rooms and therefore any results depending on such data can at best only be considered as approximate. However, the performance of a dryer section of a machine in the tropics so far as B. T. U's required are concerned can be as fairly compared with another in the northern countries as two steam boilers in the different localities.

It will not be easy to account for all the differences in the number of B. T. U's required by different machines at different times with so many different and almost constantly varying conditions, even on nominally the same grade of product but certain glaring factors are sure to show up when large differences appear in tests and after they are manifest it is usually possible to make improvements either in equipment or in operating conditions. At least the defect if shown up can either be remedied or faced with open eyes.

After making a test the question will naturally arise, "What, then is the efficiency of this dryer section as compared with 100 per cent, the theoretical?" The answer seems to be that "There ain't no such animal."

It is true that a theoretical efficiency figure can be arrived at for any particular machine but this figure is useless as a basis of comparison with another machine. For instance a 124" machine as compared with a 100" machine having exactly the same number of dryers, arc of contact with paper, etc., etc., would have an appreciably different theoretical efficiency because there is proportionately less ineffective radiating surface in drying heads and ends of dryer cylinders outside the sheet. Again, one can at least imagine a machine running at a speed slow enough so that the sheet would be dried without any steam whatever being used, in which case its thermal efficiency would be infinity.

There have been distributed a list of the items that it is necessary to get. There is no use of doing anything unless you get these items. Undoubtedly there are a great many items which, as Mr. Farnsworth has pointed out, it would be well to get, a lot of them do not cost anything to get and they might as well be put down. I will read the list:

Test of Paper Machine Dryers Data Sheet

1. Mill
2. Machine No.
3. Grade of Paper
4. Date
5. Duration of Test
6. Time lost during breaks
7. Barometric Pressure in Machine Room
8. Temperature of air surrounding dryers
9. Relative humidity of air surrounding dryers
10. Pounds of air entering machine
11. Temperature of air in exhaust stack
12. Relative humidity of air in exhaust stack
13. Temperature of stock entering dryers
14. Width of sheet leaving last dryer
15. Per cent bone dry fibre in sheet entering dryer
16. Per cent bone dry fibre in sheet leaving last dryer
17. Weight of moisture evaporated from sheet per pound of paper dried
18. Speed of machine at calendars
19. Total weight of paper dried
20. Basis weight
21. Total weight of water evaporated from sheet
22. Total weight of steam supplied to dryers
23. Pressure of steam entering dryers
24. Temperature of steam entering dryers
25. Quality of steam entering dryers
26. Heat units per pound of steam entering dryers (Marks & Davis)
27. Total heat units supplied to dryers
28. Pressure of discharge leaving dryers
29. Temperature of discharge leaving dryers
30. Heat units per pound of discharge leaving dryers
31. Total heat units in discharge from dryers
32. Heat units absorbed by dryers
33. Heat units absorbed by dryers per pound of moisture evaporated from sheet

Machine Data

34. Number, dia. and face of main dryers
35. Number, dia. and face of Felt dryers
36. Number, dia. and face of baby dryers
37. Effective heating surface (actually in contact with paper)
38. Total surface (including projected area of heads)
39. Ratio (effective to total, exclusive of felt dryers)
40. Dryer heads insulation
41. Type of dryer hood.
42. Type of pit under dryers.

Item No. 6 is necessary, as Mr. Warner has pointed out, so that you can get back to what is the actual use of steam on the dried stock. With reference to items 8-10, these are all simple to get and it is the easier way to get the volume of air that is passing through. It is probably a great deal more accurate than any information we generally get from the fan manufacturer because a change of the wind against the ordinary exhaust fan may change the capacity of the fan 100 per cent. We could figure very much more closely with that information. Item 13 is easy to get and necessary if you want to get at the B. T. U's. With reference to item 14, theoretically you should have the average width of the sheet from the first dryer to the last but it is a good deal of a job to get it and I think that if you got it at the one place it would be good enough. Item 19 calls for the total weight of paper dried, not produced but what has passed over the dryers because what we want to get is the heat unit for the moisture evaporated and to do that you must find out how much water has gone over the machine. With reference to item 26, we put in the Marks & Davis tables; because some of the other tables give it in a slightly different way and we ought all to be talking of the same thing. Item 28 and the following items look a good deal easier than they are. Pressure of discharge is all right and temperature of discharge is all right but you will have to look out in figuring out the heat unit per pound of discharge and the heat unit in discharge from the driers. That appears to be necessary but it is a good deal of work to get it. That is the part that is the hardest of the whole thing. Having that, it is a question of arithmetic to find how much is absorbed by the dryers.

I think we are to-day getting into a bad habit in talking about the pounds of steam required to dry a pound of paper as being anywhere from 2½ to 4 or higher. With new [illegible] at least that does not amount to anything because we do not say how wet the sheet was in going on the dryers or how wet it was in coming off the dryers. We do not say anything about the number of heat units in the steam or how much went out through the traps or through the discharge of the dryers.

With regard to machine data, it is very easy to get and it is necessary for the purpose of comparing a certain drier section with another one in the same mill or in some other mill. We think we cannot get along with anything less than the list calls for. Some of these questions will be answered with a simple "yes" or "no", for instance, the dryer head insulation.

MR. J. E. A. WARNER: I would like to ask Mr. Wardle in respect to items 8 and 9, how he would arrive at the temperature and relative humidity of the air surrounding the dryers.

MR. WARDLE: Probably Professor Keay can answer that question better than I can.

MR. WARNER: What I would like to know is how are you going to get the true value for these quantities. At one point you might have a quantity of air at a certain wet bulb temperature, entering the dryers, while at another point both the quantity and temperature might be quite different. Since the amount of vapor held by the air does not follow a straight line relation for different temperatures, it is not possible to take an average of these readings and assume this as the condition of all the air entering the dryers.

PROFESSOR KEAY: We checked it very closely by taking six or eight stations and, of course, these stations were selected by taking a large number of readings, over five hours, with the wet and dry bulb thermometer. The fact that a number of stations were taken and that the results varied only slightly gave the required accuracy.

MR. WARNER: Did you find any very great difference in the temperature and relative humidity around the perimeter of the dryers, or were the temperature and degree of humidity fairly constant?

PROFESSOR KEAY: There was not any great change — no change of more than 4 degrees with the dry bulb thermometer in five hours.

MR. J. E. A. WARNER: Probably the fairly constant condition, which you experienced, accounts for the good results which you obtained. Our experience, however, in making a similar test, was that the temperature at the wet end was considerably lower than at the dry end, and also that the relative humidity changed considerably for the different points around the perimeter of the dryers.

PROFESSOR KEAY: I am sorry I did not understand your question. Yes, there is quite a difference between the dry end and the wet end. I thought you meant the variation during the test.

MR. WARDLE: Mr. Warner's question is probably one instance out of a number here of pulling out the nigger in the wood pile. Each machine has to be considered by itself, the conditions surrounding that machine have to be tackled independently and then, having the results, you have to hunt through every trail and find out what they mean. There is one point I forgot to mention and that is that probably it would be advisable to put in a freeness of stock item but we thought it would be useless until we had a standard freeness tester. We are all using more or less different freeness testers and we might as well forget this until we can get a standard tester developed and, in my opinion, that is one thing that this section ought to tackle.

MR. STEPHENSON: Might I ask Mr. Wardle why he left out, in connection with item 13, the temperature of the paper leaving the dryers, whether he considered it unnecessary, difficult to get or not worth while?

MR. WARDLE: If anybody can show us how to get that we would like to get it. There are only comparatively few heat units involved but I do not see how it is possible to get at them. We just left that item in the discard. This is not an absolute, precise code, it is only an approximation and we never would get it accurately if we had a thousand items.

MR. STEPHENSON: I asked the question because I think it is necessary.

MR. MOSHER: You do not really need the temperature of the paper coming out of the machine. It would amount to the same thing as taking into account the 8 per cent. of moisture that is in the paper, the amount of heat required to raise it up to the evaporation point and the amount of moisture that has been evaporated out.

MR. STEPHENSON: I asked the question because, if you take the temperature of the stack going into the dryers, and you know the bone dry content, you will know that after it goes through the machine there is 8 per cent of moisture on the basis of the bone dry content. It mounts up and in the course of a day you may get 75 tons of water. I do not know what the temperatures would be but I would say that you are raising that 75 tons from a temperature of 65 degrees —it may be 60 degrees — up to probably not less than 100 degrees. It is probably, going away from the dryers, between 100 and 120 degrees. That heat is dissipated during storage, you have to put that heat into it and it is not effective drying heat. It is the heat in the paper that is carried away and in that respect has had its effect in helping to bring the whole mass up to the evaporating temperature but still it is heat wasted. You have had to put the heat in, and if you have had to put it in incidentally to the process of drying, why not account for it?

MR. WARDLE: What Mr. Stephenson has said may all be true, but the difficulty is to find what it actually is. The tendency of most machine men is to "sweat" the last dryer and in order to get at the temperature accurately you would have to break the sheet down ahead of the last dryer and that makes a mess.

MR. STEPHENSON: You asked a minute ago how the temperature could be obtained. I happened to notice in one of the publications a little while ago the description of a thermometer which was carried on three bearings. It was so adjusted that the thermometer could be attached to the cylindrical surface whose temperature was to be ascertained. I do not know whether anybody has tried that.

MR. WARDLE: Professor Keay and I were going to get a patent on that until we found somebody had got ahead of us. It is along the same line as the rig that Mr. Warner used for getting the temperatures but I do not know whether it is worth while bothering with.

MR. FARNSWORTH: We tried one of those. We put a thermometer very close to the dryer but we could not get accurate readings. One day we would have moist steam and the next day dry steam around the thermometer. We tried it with different dryers to find out the different temperatures but we would come back again to the same dryers and get all kinds of readings with the conditions apparently the same. We turned that thermometer down as an absolute failure. I cannot understand why the temperature of the dryer inside cannot be gauged by the pressure of the steam that is in the dryer. If we have 5 lbs. of steam in the dryer and no water or air in the dryer we ought to be able to find out from our steam tables the temperature of the dryer as closely as we need to. I do not see why you could expect to get an instrument that would take a reading from the outside of the dryer as closely as the relative temperature would be due to the pressure of the steam in the dryer if there was no accumulation of water and air.

MR. WARNER: I would like to ask Mr. Farnsworth if he knows of any system of determining the temperature on the shell of the dryer because that is what gives that contact with the air. It seems to me that there is a strong possibility of having an air film on the inside of the dryer as a result of which you are going to have a drop in the temperature, and another on the outside of the dryer, and in each case you are going to have a drop in the temperature. I would like to know how you are going to get the temperature on the inside of the dryer.

MR. FARNSWORTH: That is quite true. I have seen water and oil within the dryers resulting in a drop in the temperature of fifty per cent of the heat or steam required to dry. Of course, I mentioned the fact that all things being right inside of the dryer, it being clean and free of air or water, it should be possible to ascertain the temperatures from the pressure of steam. The thickness of the dryer is also a consideration and I believe that we could go so far as to take into consideration the quality of the iron in the dryer. Some iron is more porous than other kinds and the heat will pass through it more quickly; therefore, the quality and thickness of the iron is a factor.

MR. WARDLE: I move that a vote of thanks be tendered to Messrs. Slater and Warner for this excellent paper and to the American Society of Mechanical Engineers and the St.

Maurice Paper Company for allowing the paper to be presented at this meeting.

PROFESSOR KEAY: I have much pleasure in [illegible] that motion.

Motion agreed to.

EFFECT OF PRESSURE ON STRENGTH OF TEST SHEETS

MR. BRYANT: The hour is getting late and I [illegible] that we will be obliged to omit the last paper [illegible] Determination of the Effect of Pressure [illegible] Test Sheets in the Strength-Testing of Pulp" by Mr. E. G. Cameron, Chief of the Division of Pulp and Paper, Forest Products Laboratories of Canada. This is a very interesting paper on which Mr. Cameron has put a great deal of work and is more or less a report of the work he has done in connection with the Committee on Chemical and Physical Standards.

REPORT OF NOMINATING COMMITTEE

MR. BRYANT. We will now pass to [illegible] Nominating Committee.

MR. STEPHENSON: Before presenting this report, doubtless some will be interested in the suggestion that Mr. Wardle made with respect to a freeness tester, and I thought that some of you might wish to stay for a few minutes in order to hear what Mr. Cameron may have to say on that subject as it came up in connection with the work that he did on the paper that will be published in due course.

I regret that Mr. Anderson is not here to make his own report, but I have very great pleasure in presenting the nominations, but with the distinct understanding that this is merely the Committee's best judgment on the matter and the hope that if any of you have other suggestions to make for any of these positions, you will not hesitate to make them. It has been the custom of the Section to elect the Vice-Chairman to the position of Chairman of the Section. Due to circumstances which interfere with this program, Mr. Hovey sends his sincere regrets that it will not be possible for him to entertain any such proposition this year and very respectfully requests that we do not present his name for the position. It is the unanimous feeling of the Nominating Committee and of a great many others to whom we have put the question that our present Chairman should be nominated and requested to serve, for the next year. I will entertain any further nominations.

Mr. Stephenson having taken the Chair.

MR. BRYANT: I thank the Nominating Committee—

MR. STEPHENSON: We will not listen to any explanations.

MR. BRYANT:—for the honour they have done me in nominating me for this position, but it seems to me that the honours and responsibilities of the office should be taken over by some other member of the Section. This does not mean that if you insist I will refuse; I will not withdraw my name, but I would be more than pleased — I would be delighted — if you would nominate someone else and elect him. I really do not want to serve for another year.

MR. STEPHENSON: This is more or less of a critical period. Tomorrow the main Section is going to vote on a very important subject, and I do not think we ought to change captains just at this time. Mr. Bryant has been in very close touch with a number of important developments that are now going forward and it would be unfortunate, I am sure, if it were necessary for some one else to acquaint himself, even if he could acquaint himself, as intimately with these matters as Mr. Bryant now is acquainted with them. Are there any further nominations?

MR. WARDLE: I move that the nominations close and that Mr. Stephenson cast a ballot.

MR. W. B. CAMPBELL: I second the motion.

Motion agreed to.

MR. STEPHENSON: I have great pleasure in introducing the new Chairman, Mr. Orville F. Bryant.

MR. BRYANT: I thank you for the honour you have done me and I hope that I can do better work next year than I have done in this. However, if I do not, it is your fault; you have put me in the position.

MR. STEPHENSON: Mr. Bryant said a minute ago that he hoped to be able to bear the duties and responsibilities of the office this year and I am sure that it will be easier for him to do so in view of the fact that the burden will be carried in considerable part by other members of the Executive Committee. There is a gentleman in Toronto who likes to get to Montreal once in awhile for an Executive meeting and we would like you to grant him that opportunity. I am sure he will accept nomination as Vice-Chairman. I refer to Mr. C. Nelson Gain, a gentleman who has served on the Council with considerable satisfaction to all concerned.

MR. BRYANT: Are there any other nominations for Vice-Chairman?

PROFESSOR KEAY: I move that the nominations be closed and that the Secretary be instructed to cast one ballot.

MR. SLACK: I second the motion.

MR. BRYANT: Mr. Gain is elected Vice-Chairman of the Technical Section.

MR. STEPHENSON: It has been the custom for the retiring Chairman to sit with the Council but as it happens this year that the Chairman is staying where he belongs, it is necessary to have some one else to do that, and so we have asked Mr. Hovey, who has been acting as Vice-Chairman during the past year, to go into the Council. With him we have submitted the nomination of Mr. A. P. Costigane who is Secretary and Engineer for the Ontario Pulp and Paper Makers Safety Association and who has been a most enthusiastic worker in a great many fields of endeavour in our Technical Section. Then, we have another man from a far-away mill — Abitibi on the one hand and Price Bros. on the other — in Mr. C. S. V. Hawkings, who is the third nominee of the Committee for the position of Councillor.

MR. BRYANT: Are there any further nominations?

MR. SLACK: I move that the Nominations close and that the Secretary cast one ballot for the three Councillors.

MR. LEE: I beg to second the motion

Motion agreed to.

MR. BRYANT: Is there any further business to come before the Meeting?

MR. STEPHENSON: I might ask if there is any objection on the part of the members to the continuation of Mr. Edward Beck in the position of Secretary-Treasurer of the Section. Otherwise, it will be understood that Mr Beck is Secretary of the Association and will continue in this office.

MR. BRYANT: I think it would be well to formally adjourn the meeting at this time so that, if any members feel that they must go, they may do so.

MR. STEPHENSON: I may say that it will be a pleasure to the Section and to the Council if, on reading these papers, anyone who has any comments or criticisms to make, or any discussion to submit he will kindly do so by correspondence. Any suggestions, comments or discussion will be included in the Year Book of the Section. That applies particularly to the paper of Mr. Cameron which unfortunately cannot be read at this session.

VOTE OF THANKS TO RETIRING OFFICERS

MR. STEPHENSON: Before that motion is put, it has been my privilege for a number of years — and I do not want anybody to get ahead of me in that respect if I can help it — to move a hearty vote of thanks to the retiring officers of the Technical Section. Everybody who has been in touch with the Executive during the year cannot help appreciating the amount of hard work that they have given to their duties to say nothing of the sacrifice of time and the bestowal of serious thought upon the problems of the section. We have never had an Executive which did not realise the full responsibilities of office and that of the past year is no exception. These gentlemen have simply given themselves up to the work of the Section during the past year and it is little enough to give them a hearty vote of thanks. I would like to make that motion. Seeing that the Chairman is very bashful about the matter, I shall put the motion to the meeting.

DR. BATES: I have pleasure in seconding the motion.

THE ACTING-CHAIRMAN: I declare the motion carried unanimously.

MR. BRYANT: I am sure that the members of the Executive Council appreciate your kindly expressions with regard to the way in which they have performed their duties. We endeavoured, in a more or less feeble way, to do the best we could during the year. The Section has been pretty successful and I am sure the incoming Executive will make it even more successful than we have been able to do.

MR. MASON: I beg to move that the meeting adjourn.

PROFESSOR KEAY: I will second the motion.

NOTE: The Publication Committee will now proceed to publish the Proceedings. If there are any corrections to be made in the papers, reports, or discussions, please send them in at once to J. N. Stephenson, Gardenvale, P. Q.

Book Reviews

GLUE AND GELATIN—Jerome Alexander. Octavo 230 pages. Chemical Catalogue Co., Inc., New York.

This is one of the American Chemical Society's series of monographs on chemical subjects undertaken to carry out an arrangment made at the International Conference of Pure and applied Chemistry which met in London and Brussels July 1919.

This work holds interest for paper makers in that glue is used in sizing and for paper box makers in "setting up" and "stripping"; reference is briefly made to such use pp. 206-7.

Paper mill chemists who are called upon to test glue for uniformity and quality will find much to interest them in chapters 10, 11 and 12 on the chemical examination,technology testing and grading of glue and gelatin.

Personally the writer of this review has not had satisfactory results using phenolphthalein as an indicator in determining the acidity of commercial glue (p. 131). The end point is masked by the consumption of the red colored compound, necessitating addition of fresh quantities of the indicator near the end of the titration. On p. 29, this following sentence occurs, "Once we realize the fact that gelatin has a coarser physical as well as a finer chemical structure, we may be able to understand its hydrolysis and degradation without having recourse to ingenious but weird purely chemical explanations or formulas which have no counterpont in the actual facts although in some cases they may not be disproved by the present experimental evidence".

That paragraph is to be commended to cellulose theorists.

The effect of gelatin on alum (p. 126) may account to some extent for the foaming trouble in cases when glue may be present in sizing or from bindings or pad heads. In this case free sulphuric acid may be developed and putting additions of alum would tend to increased foam trouble, especially if carbonates are present.

The number of authors quoted is evidence of extensive bibliographical study by the author. This fact is emphasized in the index, wherein this "author" section is of the same size as the "subject" section.

The subject is well treated and in language that makes smooth and comfortable reading especially for those who have not made a close study of this interesting subject.

Glue as the typical colloid cannot fail to be of interest to all colloid chemists and thus to cellulose technologists.—T. L. C.

SOMETHING FOR EACH OF US TO GIVE THOUGHT TO

George H. Mead, President of the Mead Pulp and Paper Co., Dayton, Ohio, says: "The World is entering upon the most competitive period that industry has ever experienced and companies which insist upon following old methods will one by one fall by the wayside and lose their indentity, and finally their lives. Absolute elimination of the waste and the running of machines without breakage are absolutely necessary."

SUMMER MEETING AND EXCURSION

The Technical Section has been invited by the Provincial Paper Mills, Limited, (Port Arthur Division), Port Arthur, Ont., and the Fort William Paper Company, Limited, Fort William, Ont., to hold this year's Summer meeting at the twin cities at the head of the Lakes, and the Executive Council has accepted the invitation, subject to enough members signifying their intention to attend.

Port Arthur and Fort William, as is generally known, are rapidly becoming a pulp and paper centre. The paper mills of the Provincial and the Fort William Company are new, having come into production within the year. An inspection of these mills and their equipment will be of interest to every practical paper man. In addition, there are many other things of interest to be seen in Port Arthur and Fort William and probably no section of Canada offers greater attractions to the visitor.

The dates tentatively fixed upon for the outing are June 23rd to June 30th.

The trip will be made by train to Sarnia, Ont., and by water from Sarnia, on the S. S. Noronic, according to the following schedule:

Leave Montreal 11.00 p.m. Friday, June 22, G.T.R. Arrive Toronto 7.30 a.m. Saturday, June 23, G.T.R. Leave Toronto 10.05 a.m. Saturday Boat Special, arrive Sarnia Wharf 3.45 p.m. Saturday, Boat Special, leave Sarnia Wharf 4.00 p.m. Saturday, N. N. Co. arrive Port Arthur 7.00 a.m. Monday N N. Co.

Returning

Leave Port Arthur 1.00 p.m. Wednesday, June 27th, N. N. Co. arrive Sarnia Wharf 5.30 a.m. Friday, June 29th, N. N. Co. Leave Sarnia Wharf 9.00 a.m. Friday, June G.T.R.(X) arrive Toronto 2.35 p.m. Friday, June G.T.R., leave Toronto 8.30 p.m. 11 00 p.m. Friday, June 29th, G.T.R., arrive Montreal 7.00 a.m. 7.30 a.m. Saturday, June 30th, G.T.R.

(X) G.T.R. Boat Special Dining and Parlor Cars.

FARES — From Montreal to Port Arthur and return inclusive of lower berth, Montreal to Toronto and same on return trip, parlor car seat Toronto to Sarnia and same on return trip, meals and berth on steamer, inclusive, ...$81.05

To those making the trip from Toronto only the fare, inclusive, from Toronto to Port Arthur and return $64.30

The Council extends a cordial invitation to the members to bring their ladies with them on the trip. A special program of entertainment will be provided and everything will be done to make the excursion thoroughly enjoyable, from both a social and an educational viewpoint.

This notice is merely in the nature of a preliminary advice to ascertain how many members will be able to make the trip, as the arrangements we will be able to make will depend in part upon the number participating.

Kindly advise the Secretary as soon as possible whether or not you will be attending and how many persons will be comprised in your party.

Additional particulars will follow.

Officers fo U. S. Organizations

At the annual meeting, held in New York last week, of the associations connected with the Pulp and Paper Industry, officers were elected for the year 1923-24. As far as information is available, these names are given below:

American Paper and Pulp Association

The following were elected officers of the Association for 1923-24:

President, Henry W. Stokes, York Haven Paper Co.; Eastern Vice-President, Norman W. Wilson, Hammermill Paper Co.; Western Vice-President, Walter J. Randall, Champion Coated Paper Co. Members of Executive Committee at large: Col. W. E. Haskell, International Paper Co.; Louis Bloch, Crown-Willamette Paper Co.; L. H. Davey, W. O. Davey & Sons.

Woodlands Section

Officers of the Woodlands Section for the next year include. Chairman, C. W. Hurtubise, Hammermill Paper Company, Erie, Pa.; Vice-Chairman, George N. Ostrander, Finch, Pruyn & Co., Glens Falls, N. Y. and J. E. Alexander, Nekoosa-Edwards Paper Co., Port Edwards, Wis.

Waxed Paper Manufacturers

The Waxed Paper Manufacturers Association elected the following officers:

President, C. A. Buskirk, Wolverine Paper Co., Otsego, Mich.; Vice-President, J. W. Hurlbut, Bennington Waxed Paper Co., Bennington, Vt.; Secretary-Treasurer, O. B. Towne, N.Y.

Vegetable Parchment Paper Manufacturers

The Vegetable Parchment Manufacturers Association elected W. F. Brunner, Paterson Parchment Company, Passaic, N. J., as president and O. B. Towne, Secretary-Treasurer. The Association decided to carry on definite traffic activities, and also to participate in a broad way, in the activities of the Clean Food Association.

Tissue Paper Manufacturers

At the Annual Meeting of the Tissue Paper Manufacturers Association, held on Tuesday, April 10, 1923, the following officers and Executive Committee were elected for the ensuing year:

President, John Brannan, North End Paper Co., Fulton, N. Y.; Vice-President, J. M. Ross, Sauquoit Toilet Paper Co., New Hartford, N. Y.; Secretary-Treasurer, E. H. Naylor 18 E. 41st Street, N. Y. Executive Committee: John Brannan, North End Paper Co., Fulton, N. Y.; A. D. Coffin, C. H. Dexted & Sons, Inc., Windsor Locks, Conn.; W. L. Heath, West Milton Paper Co., New York; L. C. Jeffress, Wortendyke Mfg. Co., Richmond, Va.; J. M. Ross, Sauquoit Toilet Paper Co., New Hartford, N. Y.

Salesmen's Association

Election of officers, Salesmen's Association of the Paper Industry:

President, J. I. Fearing, International Paper Co., Chicago, Ill.; Vice-President for New England District, Walter Perry, Chemical Mfg. Co., Holyoke, Mass.; Vice-President for New York District, R. D. W. Ewing, American Writing Paper Co., New York; Vice-President for Chicago District, Ray Russell, Marathon Paper Co., Mills Co., Chicago, Ill.; Vice-President for Miami Valley, Robert B. Houk, Jr., Mead Pulp and Paper Co., Dayton, Ohio.

Cover Paper Manufacturers

At the Annual Meeting of the Cover Paper Manufacturers Association, held on Tuesday, April 10, 1923, the following officers and Executive Committee were elected for the ensuing year:

President, F. E. Taylor, Advertisers Paper Mills, Holyoke, Mass.; Vice-President, Thos. Beckett, The Beckett Paper Co., Hamilton, Ohio; Secretary-Treasurer, E. H. Naylor, 18 East 41st Street, New York. Executive Committee: F. E. Taylor, Advertisers Paper Mills, Holyoke, Mass.; Thos. Beckett, The Beckett Paper Co., Hamilton, Ohio; D. L. Quirk, Jr., Peninsular Paper Co., Ypsilanti, Mich.

Member of Executive Committee of A. P. & P. A., F. E. Taylor.

U. S. Pulp Producers Association

At the annual meeting of the U. S. Pulp Producers Association held on Tuesday, April 10, 1923, the officers and Executive Committee were elected for the ensuing year.

President, D.C. Everest, Marathon Paper Mills Company, Rothschild, Wis.; First Vice-President, L. M. Alexander, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Second Vice-President, E. W. Kiefer, Port Huron Sulphite & Paper Co., Port Huron, Mich.; Third Vice-President, W. H. Savery, Harpers Ferry Paper Co., Harpers Ferry, W. A.; Executive Committee: Herman Elsas, Continental Paper and Bag Mills 16 East 40th Street, N. Y. C.; Geo. W. Sisson, Jr., Racquette River Paper Co., Potsdam, N. Y.; Col. A. C. Goodyear, Bogalusa Paper Co., Inc., Marine Trust Bldg., Buffalo, N. Y. Secretary-Treasurer, O. M. Porter, 18 East 41st Street, N. Y. C.

Gummed Paper Manufacturers

That an advertising campaign to promote the use of gummed tape is already well under way, was the announcement made at the meeting of the Gummed Paper Manufacturers' Association on April 10. The campaign is a part of the decision of the association to work for the general recognition of fixed standards of quality, for gummed tape, and the members of the association have adopted a trade mark which will serve as a guarantee that the tape sold by the members is up to the approved standards of strength and quality. The officers elected were:

President, C. H. Crowell, Crowell Corporation, Brooklyn, N. Y.; Vice-President, Phillips Kimball, Liberty Paper Company, N. Y.; Secretary and Treasurer, Jacob Erichsen.

Cardboard Manufacturers

The Cardboard Manufacturers Association at its meeting on Wednesday elected Joseph Lowe of the Fallulah Paper Company of Fitchburg, Mass., as president.

Glazed and Fancy Paper Manufacturers

A further continuance of the progressive activities begun during the last year was determined upon at the meeting of the Glazed and Fancy Paper Manufacturers' Association. Among other matters discussed was the continuance of the work begun last year looking toward the establishment of uniform cost accounting methods in the mills of the members. The officers elected were as follows:

President, W. H. Shuart, Springfield Glazed Paper Co., Springfield, Mass.; Vice-President, N. N. Fowler, Hampden Glazed Paper and Card Company.

Wrapping Paper Manufacturers Service Bureau

The Wrapping Paper Manufacturers Service Bureau does not hold its annual meeting during the spring convention week, and its meeting was confined to discussion of internal affairs of the bureau, no officers being elected at this period.

PROGRESS IN THE BRITISH TECHNICAL SECTION

From Our London Correspondent

In this letter I will deal with the annual report presented to the Association by the Secretary Mr. A. W. Foster B.A. , in which significent references are made to the progess of the British Technical Section.

Mr. Foster says, inter alia, "The Technical Section has continued to progess during the year and has already carried out a large part of the program which was outlined in last year's annual report (as published in the "Pulp & Paper Magazine" last year). Every member of the Association is now ispo facto. A member of the Technical Section and is entitled to attend its meetings and receive all its publications. In addition there are 156 full members of the Section (employees of Association members) 102 associate members (firms in allied trades or their employees), and 28 junior members. Arrangments have been completed for the publication of a series of monthly technical abstracts, giving full summaries of all important contributions to the continental technical press. These are supplied free to the Association members, who thus receive gratis a service which was formerly sold for £12. 12s. per annum, and indeed, is still charged at that figure to outsiders.

The Library

"The Association's reference library has now been established and contains the principal text books both on papermaking and on the allied sciences. Members are already taking advantage of the opportunity of consulting books in the library and of borrowing them for home perusal. In addition to other activities of the Section, allusion should be made to the visit of Dr. Sigurd Smith, of Charlottenlund, Denmark, who read papers before the Royal Society of Arts and before the London Division of the Technical Section on the Theory of Beating. A translation of Dr. Sigurd Smith's treatise, which has been made under the auspices of the Technical Section, is now in the press, and will be published shortly by the Association, with the cooperation of the Technical Association's of Canada and the U. S. A. Dr. Smith's work is regarded as a most important contribution to the investigation of one of the fundamental problems of the papermaking process. The influence of the Technical Section in encouraging workers to seek technical instruction is reflected in the increased number of successful candidates at the papermaking examinations held by the City and Guilds of London Institute, no fewer than 55 having passed in the First Grade and 9 in the final Grade. The Association's special certificates and prizes were awarded to 38 of the candidates who were qualified for these as being employed in paper mills.

"The Technical Section is also endeavouring to assist students who, by reason of their employment in remote country districts, are unable to attend classes for instruction and a scheme of postal tuition has been organised for the purpose."

This is about the best and most encouraging report the Technical Section has ever had presented to the Association. It shows that real progess has been made and that, in many respects, Canada is being emulated.

Imports and Exports: "Sixes and Sevens"

I have at frequent intervals pointed out in the "Pulp and Paper Magazine" the inaccuracies in classifying imports and exports in and out of the United Kingdom. Canada is often placed under "other countries"—when the imports came only from Canada—and newsprint is sometimes classified with fine printings. It is Board of Trade bungling and "red tape." Mr. Foster now makes in his annual report this important and significant statement:

"The Association has for some time been urging modification of the method of classification of paper imports and Exports in the monthly Board af Trade "Returns of Trade" and has now received the privelege of appointing a member of the Federation of British Industries Committee on Statistics, a Committee which exists for the purpose of advising the Board of Trade Statistical Department on this question."

Imports from all countries should be shown and the British Exports want greater attention in classification. It is found that the weekly Customs sheets do not in totals often agree with the monthly return. We want full facts of British Exports, as well as the Foreign imports—otherwise they must be got through questions in the House of Commons.

State of Trade

Commenting on the past year Mr. Foster says: Although it was free from any such industrial convulsion as was caused in the previous year by the coal stoppage, it saw no general recovery in trade and manufacturers were still hampered in their operations by the necessity of running on short time, this keeping their costs on a needlessly high basis. Still as the year went, there was a slight but perceptible improvement and at the end of December the unemployment figures showed only 4,265 workers completely out of work, as against 8,289 twelve months previously, while the figure of 5,163 on systematic short time had dwindled almost to nothing. As the number totally unemployed in all insured industries was 1,431,929, a per-centage of 12.2 while the papermaking per-centage was only 7, it is clear that papermaking is well in advance in its progess toward prosperity, though obviously complete recovery cannot be expected until a revival occurs in such trades as shipbuilding, iron and steel making, and engineering, whose per-centages of unemployment in December last were 35.6 and 20.6 respectively."

Mr. Foster also makes a reference to the negotiations over the wood pulp contract note and he says: "....Agreement was reached on all points, except the Knotty problem of the **force majeure** clause, the draft presented by the Scandinavian delegates, as amended by the conference, not meeting with the approval of the Executive council. An alternative suggestion is being prepared and will shortly be submitted to the wood pulp organisation."

This clause has been a bone of contention for the last 10 or 12 years—or more.

But What of Labor!

The report of the Association is carefully prepared but one would like to see more explanations on the trade, Labor, prices, etc., up to December 1922.

Lady Northcliffe

Lady Northcliffe, wife of the late Viscount, was remarried this week to Sir Robert Hudson, a politician.

PULP AND PAPER NEWS

During last year the Anglo Newfoundland Development Company earned a profit of £241,563. It is proposed to extend the capacity of the paper mills at Grand Falls.

The importance of the pulp and paper industry to Three Rivers, P. Q., is illustrated by the freight handled there last year. Out of a total of 246.236 tons of outgoing freight, rail or water, there were 87,120 tons of paper, 142.720 tons of pulp and 8,916 tons of lumber. The incoming freight totalled 275,848 tons, and included 117,516 tons of pulp and 5,460 tons of lumber, besides which was coal, sulphur and other supplies for the mills.

Mr. A. Aronovici, Continental director of the Great Eastern Railway of England, is on a visit to Canada to study the trade in pulp, lumber and grain, especially with reference to French requirements.

Mr. Edwin Crabtree, of Joliette, P. Q., has now returned to his home after a considerable period as a patient in one of the Montreal hospitals. He was one of the many Canadian visitors in New York last week.

We are informed that the Manitoba Pulp and Paper Company, Limited, will go ahead at once with the project for constructing a mill on the Winnipeg River. A railway about 12 miles long is to be constructed from the C.P.R. on to the site. Mr. Hardy Ferguson, of New York, has been commissioned to draw up detail plans of the plant, which it is proposed will consist of a 160 ton newsprint mill, with two machines and a groundwood and sulphite mill. The Winnipeg Electric Power Company will supply the electrical power, a transmission line of the Company crossing the site of the mill. It is proposed to build a town site. The company will develop the McArthur timber limits.

The long expected Riordon re-organization plan will, we understand, be issued in a very short time.

C. Howard Smith, of Montreal, President of the Howard Smith Paper Company, was a business visitor in Toronto and Georgetown, Ont., last week.

It was announced in Toronto last week that C. E. French, who for the past couple of years has been with George Davidson in the Toronto office of the Howard Smith Paper Company, had been appointed export representative of the company. The new position will take Mr. French to various quarters of the globe for the Howard Smith Company have agencies in nearly every country. That Mr. French is well-fitted for the responsibilities of his new post is the general opinion amongst the paper trade in Toronto by which he is held in high esteem. His departure from the city will be regretted by the company's large clientel in Toronto. Arthur Hobson, who has had charge of the Winnipeg branch, is expected in Toronto shortly to fill Mr. French's place in the local office. Mr. Hobson was formerly with the company in Toronto before going to the west.

The Toronto Carton Club held a well attended meeting and luncheon at the King Edward Hotel, Toronto, a few days ago, at which various matters pertaining to the trade were discussed. Among the outside guests present were John Small, of the Guelph Paper Box Company, and Duncan McDermott, of the Sommerville Paper Box Company, London, Ont.

At a meeting and luncheon of the Commercial Stationers Association of Toronto held in that city a few days ago the guests of honor were Charles L. Mitchell, President, and Fletcher B. Gibbs, General Manager of the National Association of Stationers and Manufacturers of the United States, both of whom spoke urging closer co-operation between the members of the trade in Canada and the United States. A number of local speakers also addressed the meeting.

Messrs. Warwick Brothers & Rutter, manufacturing stationers, Toronto, have just put out a fine new line of scribblers and work books for school children and students. Some very clever covers have been designed, and are being utilized with the object of giving useful information to the scholar in letter press as well as in picture form.

Among the Toronto paper men who visited the New York paper show last week were George Carruthers, of the Interlake Tissue Mills, Limited.; T. E Gain of the Ratcliff Paper Company, Limited; Charles Syrett of the Victoria Paper and Twine Company, and W. H Sherriff, of the Hodge-Sheriff Paper Co.

S. F. Duncan, of the Provincial Paper Mills head office, Toronto, spent part of last week at the Port Arthur mill of the company.

A committee from several of the paper box manufacturing companies in Ontario has had several meetings recently with a view to outlining a program the adoption of which should reduce the number of accidents that have been occurring in the Ontario paper box making factories. Already a number of recommendations along safety first lines have been recommended to the trade and they are meeting with favor. It is with the object of reducing the cost of compensation, as well as from the humanitarian standpoint of protecting the employees that the committee is at work under the leadership of F. W. Fisher, of the F. W. Fisher Co., Ltd., Sherbourne Street, Toronto, paper box manufacturers.

Secretary S. J. Frame, of the Canadian Paper Box Manufacturers Association, is busy in Toronto preparing the program for the annual meeting of the Association which takes places at the Clifton House, Niagara Falls, Ont., on June 25 and 26. From present indications the convention will be one of the largest yet held.

The Telfer Manufacturing Company, paper box manufacturers, 14 Duncan Street, Toronto, have installed a sprinkler system in their plant.

James J. Venables, of Montreal, Canadian representative of Charles W. Williams & Co., New York paper dealers, was a business visitor in Toronto last week.

In the House of Commons at Ottawa, the vote for distribution of documents brought from Mr. Murdock the statement that while the annual return for waste paper for the five years ending January, 1922, was $11,000, the Government would receive for waste paper during the present year more than $22,000. Some of the members criticized the waste resulting from the publication of pamphlets and bulletins, many of which, it was stated, were never read.

Negotiations, which extend as far back as the Hearst Government's regime at Toronto, and which have for their objective the securing of the Great Lakes Pulp and Paper Company as power consumers from the Nipigon Hydro system, have at last arrived at a successful conclusion. According to an announcement made in the Ontario House last week the Great Lakes Company have accepted the contract which a committee of the Gregory Hydro Commission, acting as arbitrators drew up. The agreement provides for the annual sale to the company of 10,000 horsepower of electrical energy at a price of $18 per horsepower. The communication of this arrangement is of particular importance as the $180,000 revenue which the deal will yield annually, will go to reduce the annual deficit of $300,000 which the Nipigon system is at present incurring. The exact location of the Great Lakes Company's plant, however, is not as yet definitely fixed, being a matter of competition between Port Arthur and Fort William. The Private Bills Committee of the Legislature held a spirited session over the bill which would allow Port Arthur to dispose of half a mile of waterfront land and of some 75 adjacent acres to the pulp company at a price of $75 an acre. The bill also seeks to permit the city to transfer the land to the adjacent township of Shunia, the effect of such transfer being that an assessment of $750,000 could be reduced to one of $500,000 fixed for a period of twenty years. While the bill was approved it still has to be threshed on the floor of the House.

The Federal Paper Company of Montreal have sent out announcements stating that they have taken over the entire interests of the Maritime Paper Co., Limited, of Moncton, N. B. from April 1st last. The general manager of the Maritime Paper Company is F. G. Lancaster. The stock in Moncton, it is understood, will be closed out.

H. M. Thorne, Secretary-Treasurer of the Canada Paper Company, Limited, has returned from an enjoyable trip to Bermuda.

The American Sales Book Company, Limited, head office Toronto, and of which S. J. Moore of Toronto is President, has declared a dividend of one and three quarters per cent on preferred stock, payable May 1st to share-holders of April 17.

Brown Bros., Limited, manufacturing stationers, Toronto, are installing a Standard U. T. A. Interlocking system of accountancy in their plant.

J.A. Royer, who for the past two and a half years has been director of costs for the Toronto Typothetae, and who is well known to the printing and paper trades in Toronto, is leaving the city shortly to become associated with the Employing Bookbinders of America, with head office at 141 Broadway, New York, for whom he will devise a standard cost system.

Speaking of the pulpwood market in Northern Ontario, a leading operator from the Port Arthur district, in conversation with the Pulp and Paper Magazine said that as far as prices and demand are concerned, it was too early yet to make any forecast because no wood is cut during the spring months for future delivery and no contracts or prices will be set or talked of until August. "It appears as if American mills will have to look to our district for considerable amount of wood annually and there is no doubt the wood can be produced in the Thunder Bay area for a number of years," he declared.

The Hammermill Paper Company, of Erie, Pa., who conduct pulpwood operations in the Port Arthur district, have contracted for between 75,000 and 80,000 cords of wood, to be delivered to them during the coming season of navigation, f.o.b. vessel. It is understood that a large proportion of this wood is purchased from jobbers, but, as in the past, the company have also bought possibly 15,000 cords direct from settlers. This they will drive and load themselves. The wood of the Hammermill Co., is now all landed on the river banks ready for driving, and with the amount of snow which the Port Arthur district has had during the past season, it is not anticipated there will be any trouble in taking out the drives. The past winter is the best one that not only the Hammermill experienced, but many others as well. Contractors went through the whole season practically without a break, and until the latter part of March had just the right amount of snow, and, consequently, all jobbers are practically finished and will obtain their entire contract.

Trout Mills, Ont., is likely to become this summer the centre of considerable aerial activity according to certain phases of plans reported to be in the process of development for the closer protection of forests in the neighborhood of North Bay from the hazzard of the annual fires. A recent visitor to the district was Capt. McKeown, of the Royal Canadian Air Force, Ottawa, who is arranging for the establishment of a force of four hydroplanes at Trout Mills for scouting purposes in connection with the forest fire prevention campaign. It is also believed that there will be a number of officers and rangers located in the district with headquarters at North Bay.

NEW BRUNSWICK NEWS

The pulp and paper manufacturing interests of New Brunswick have decided to keep aloof from the newly formed New Brunswick Employers' Association. Some of the leading spirits in the pulp and paper industry had been instrumental in the organization of the New Brunswick Employers Association.

However, at a recent meeting of the New Brunswick Lumbermen's Association, it was decided that to join the new organization would be to sacrifice the identity of the New Brunswick Lumbermen's Association. So it was resolved that instead of merging with the New Brunswick Employers Association, the New Brunswick Lumbermen's Association would lend hearty co-operation to the new body, and continue with added zest efforts to secure recognition of the New Brunswick Lumbermen's Association by the New Brunswick Workmen's Compensation Board. This latter body is the stormy petrel in industrial life of New Brunswick. The board has been extravagantly administered.

Heretofore, the New Brunswick Workmen's Compensation Board has refused to recognize the New Brunswick Lumbermen's Association and it will be interesting to watch the progress now of the association in the efforts for recognition. Mr. McLean, the new president is a vigorous, alert executive, and has been in court battles with the board for the past year. His company refused to pay the levy of $31,000, but the judgment of the court is that the company must pay

UNITED STATES NOTES

A new development in the motion-picture field which is expected to have a far reaching effect in photo play projection is the invention by the Daytona Photoproducts Company of a paper film reel and projecting device. The innovation is said to have been worked out to a satisfactory state so that home cinematography may soon vie with the radio fad The company has a $1,000,000 factory at Dayton, Ohio, equipped to manufacture the product. While the home movie trade is the first aim of the concern, it is awake also to the possibility of entering the field of the big film house. In the new device the strip of paper is the same width as the ordinary celluloid film used in movie theatres and it can be wound on similar reels. It is treated by a special process so that it will receive a photographic imprint similar to that on the ordinary film. The paper is treated so that it will not tear readily, is not perishable, and is virtually non-inflammable. The film will not be any more liable to sudden combustion, it is said, than paper on a man's desk, and will in fact be less liable to this danger since it will be tightly wound. The manufacturers have been working with the utmost secrecy on this development, but from what could be learned it is plain that they are seeking to put movies in every home. The paper film reels attained the desired stage of perfection some months ago, but the company is still striving to improve the necessary projection machinery. It expects soon to have a device which can be bought for $50 and possibly even less. The making of film stories and educational subjects will be left to the regular motion picture producing companies.

The Interstate Commerce Commission has ruled that proposed increases in freight rates on newsprint from point in Canada and New England to Nashville, Tenn., amounting to 10 cents a cwt. are unjustified. New England railroads had joined the Canadian lines in proposing the higher schedules, which were suspended by the commission to await investigation.

As a direct result of the restrictions on Canadian saw-logs under the Fordney-McCumber tariff, the Morrison Mill Company, one of the largest operating lumber concerns in the State of Washington, contemplates the removal of its big plant from Blaine, Wash., to Vancouver. Working under the handicap imposed by the regulations of the tariff, the Morrison company finds it cannot compete in the export trade with the mills operating in Canada.

Imports of wrapping paper received in the United States from Austria during 1922 amounted to 6,443,388 pounds, valued at $229, 539, a gain of 2,711,345 pounds in quantity and $81,104 in value over the previous year.

The Michigan Public Utilities Commission has upheld the contention of Michigan paper mill men that a new intra-switching paper stock tariff which would have levied from $40,000 to $50,000 annually from the paper industry of Kalamazoo, could not be put in effect because the state laws on railroad rates had not been complied with in the publication of the proposed levy. The tariff stands suspended for the present, but it may be put in effect later unless the paper men again prevail in their arguments before the Commission.

For the year ended December 31, 1922, the International Paper Company reports a net loss of $4,725,699, after depreciation, reserves and bond interest charges, compared with a net loss of $1 107,683 in 1921. The company reported net income of $11 836,362 in 1920, which was the high mark. The company experienced labor troubles last year and expects generally improved business in 1923, due to higher prices for paper.

An increase of pay for the 200 employees of the Franklin N. H. mill of the International Paper Company was announced in a telegram sent last week by President Philip T. Dodge to D. T. McCormick, manager of the mill. The amount of the increase was not stated. Loyalty of employes and increased costs of living were cited as the reasons for the company's action. Wage advances, it was later announced from the New York offices of the International, will be general in all the company's mills. The percentage of advance, it is understood, will be in line with the statement of President Dodge in his annual report that the company would continue to pay the highest prevailing wages in the industry.

According to the Forest Service, the sale of timber on the watershed of the Silvies River, Malheur National Forest, eastern Oregon, should bring into the United States Treasury more than $2,250,000 in the next twenty years. E. E. Carter, in charge of the national forest timber sales, announced last week that the highest bid for 890,000,000 feet of Malheur timber was $2 80 per thousand feet for the yellow pine; $1.05 for Douglas fir, and 55 cents for other species. "The Government," according to Mr. Carter, "proposes to open up the region on the basis of a perpetual supply of forest products, and the forest service estimates that 50,000,000 feet of yellow pine may be cut yearly from this logging district."

At a meeting of the Yale Corporation last Saturday announcement was made of a gift of $100 000 to the Yale School of Forestry for research and experiments in forestry. The donor wished to remain unknown This donation, which will be called the forest production research fund, will provide means for working out the problems of establishing and growing forests, especially in New England. Professors James W. Toumey and Ralph C. Hawley will supervise the research work.

A new organization to be known as the Publishers' Co-operative Association has been formed by the publishers of seventeen New York periodicals. The members are banding together for the making of co-operative contracts for printing and purchase of supplies, according to an announcement of H.H. Burdick, of Hendrick's Commercial Register. The movement was started to combat the mounting costs of manufacture of periodicals in New York and also to place on a competitive footing with the large group-owners, who are able to own and operate their own plants, all those publishers whose business is not large enough to warrant the ownership of a printing plant.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, April 17. The paper trade in the Montreal district is satisfactory. The past week has shown a little revival in many lines. Compared with a year ago there is a distinct improvement, and the chances are that this will continue.

Taking a general survey of the trading during the first quarter of the year, it may be stated that the paper industry, so far as Montreal and district is concerned, has been of a steady character. It has gradually picked up,and is now on a basis which leaves no reasonable ground for complaint. In two or three directions prices are higher, in one the movement has been in other directions. A fair amount of foreign paper, including some from Germany and Austria, have come upon the market at low prices.

A considerable export business has been done from Montreal, the best customers being Australia and New Zealand. In connection with Canadian exports generally, it is of interest to note that over 73 per cent, of the value of our overseas trade from 1902 to 1922 was due to wood products and vegetable products. This was a statement made by Mr. F.V. Siebert, of the National Resources Intelligence Service, Department of the Interior, Ottawa. Mr. Siebert added that, to employ a military comparison, Canada's commercial offensive had penetrated deeply and rapidly on a very narrow front. Canada's commercial progress today, he said, which meant the greater use of its natural resources, required an advance on a wider frontage, if its future development was to remain in keeping with that of the past.

The newsprint situation is without change. The demand is still very active, and it looks as if there will be no diminution for a considerable period. There are those who are of the opinion that we may anticipate a drop in the fall, but there is as yet nothing of a substantial character on which to base this assumption. Canada is gradually increasing her output, and by the end of the year will probably be producing 4,500 tons per day. This includes all the new machines just installed and on order.

In other directions, the position is generally good. The mills report a very firm demand for book and writing papers; toilets and tissues are being well bought, wrappings are rather erratic in demand; and boards are keeping up very well. The paper stock section is still very strong.

With regard to pulp the news from Sweden confirms the report of a settlement of the dispute. There are reports that importers in the United States will be found to cancel a portion of the contracts, due to the impossibility of getting fall supplies. This should strengthen prices and also switch business to Canada. American mills must get the pulp, and failing European sources will no doubt come here. Many inquiries have already been made as to the possibility of obtaining Canadian production. Groundwood is about holding its own in the matter of price, with a large tonnage moving. Sulphite has hardened under the influence of the Swedish situation, while bleached sulphite continues a very good market.

ONTARIO MARKET NEWS

So far April has not produced the looked-for improvement in the wholesale end of the Ontario paper although manufacturers report a fairly steady demand for their products in most lines and production is keeping up fairly well. Two causes are assigned for the dullness which exists in the jobbing trade. One is the backwardness of spring and the other is the unsettling conditions created by the recent threatened increase in a number of lines of paper. Whatever the cause it is undoubtedly true that most wholesale paper houses in Ontario are not doing within 40 per cent of the business that February and March yielded. It is generally conceded, however, that there is nothing in the situation to worry about and that demand is likely to return to normal at any moment. The pulp and paper industry generally is acknowledged to be in a healthy condition and sound basically and this is backed up by the expansion that is taking place, the activity of pulp and paper securities on the stock exchange and the busy condition of the manufacturing end of the industry. The mills for the most part are busy and the output of both pulp and paper is being readily absorbed. While jobbers and printers are rather quiet the convertors of paper are quite busy and are using a lot of paper mill products. Jobbers look for an early improvement in trade and say that if they are not getting the business now they will get it within the next week or two. There have been no price changes during the week.

PULP. — The announcement of the settlement of the strike on the Swedish pulp mills has had no immediate effect on the Ontario pulp market nor is it likely to affect conditions here for some weeks. Buyers and manufacturers of pulp in Ontario are divided as to what effect the resumption of production in Sweden will have on this country but it seems to be the general belief that the Canadian product may soften somewhat when the foreign product comes onto the market. Locally groundwood pulp is quoted at $35.00: bleached sulphite at from $90.00 to $100.00: unbleached at from $65.00 to $75.00 and news grade at $65.00. The market is only fairly active.

PAPER BOX INDUSTRY. — The absence of Easter business for the millinery and dress-making trades, due to winter weather throughout the Easter season, cut a big hole in the volume of business being done by the Ontario paper box makers. They report business generally as dull although they are continuing to use fair quantities of board, chiefly for the manufacture of specialties. There is only a small demand for the standard line of paper boxes although most houses are looking for a resumption of trade as soon as the real spring weather sets in.

MANUFACTURED STATIONERY. Manufactu

ing stationers report a satisfactory volume of business along with paper convertors generally. A good trade is being done in the papeterie, pad, blank book and other manufactured stationery lines and the envelope manufacturers are also quite busy with orders ahead. The experience of one leading manufacturer is that while orders for current standard stuff are not coming in as freely, the wholesaler and retailer are buying liberally of most lines for future shipment.

TISSUES AND TOILETS. — Manufacturers in these lines report that while toilets and some other light weight paper such as towels, etc., are keeping up well there has been a slight falling off in some lines of tissues. On the whole prices remain firm and the mills keep fairly busy.

WRAPPING PAPERS. — The jobbing trade reports a continued small demand for wrapping paper and the same may be said of paper bags. There has been a considerable falling off in business in these lines during the past two or three weeks and so far the situation has shown no improvement.

PULPWOOD. — The past year was the most active in the pulpwood camps of Ontario of any since 1919-20, which was boom period in the forests products industry. The great amount of wood taken out betokens a prosperous year. All the paper mills not only put in many camps themselves but made arrangements with contractors, logging firms and others for an unusually large cordage of pulpwood. The "wood pile" of some of the big paper organizations which was built up on a high-cost product, has in the process of production and liquidation been pretty well used up, and now farseeing concerns believe that contracts may be safely made for fresh supplies as it is doubtful if operating expenses will be any lower than they are at the present period. The trend appears to be all in the opposite direction.

NEW YORK MARKETS

New York, April 14 — (Special Correspondence) — This has been Paper Week in New York, and the members of the paper industry in this city attending the annual meetings of their trade organizations brought reports of very satisfactory conditions at manufacturing and consuming centres, of mills running close to full capacity to turn out all the paper wanted by buyers, of the market displaying unusual activity and or favorable prospects for a continuance of prevailing conditions for sometime to come. Not in a long time has there been a paper convention at which so much optimism was exhibited or so much confidence expressed by manufacturers and jobbers. Everyone at the gathering in New York was in a happy frame of mind and was ready to comment on the healthiness of the present paper market and to make predictions that business would keep up in the gratifying volume of the past several months for quite a while to come.

It was pleasing to note that one thing was stressed at the convention of papermakers. That was caution. Speakers emphasized the need of proceeding slowly and carefully, paper manufacturers and dealers put much weight on the importance of not overdoing production and not increasing the facilities of mills too greatly, and there seems little doubt that the conference of paper men in this city this week is going to help materially in maintaining the stability of the market, in keeping prices within reasonable limits and in preventing the output of paper from reaching such

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volume as to have repressive effect on the market situation.

An important new development in the paper industry is that concerning wage advances for paper mill workers. With wages increased in the textile, steel and other industries, paper manufacturers have seen the necessity of granting their mill operatives higher pay, and several groups of mills have announced an advance in wages. These increases involve especially common labor, reflecting efforts on the part of paper manufacturers to prevent other industries from weaning away their unskilled workers. The International Paper Company yesterday announced a wage increase, and a good many of the fine paper mills through New England are reported to have put through wage advances. What effect this is going to have on paper prices is at the moment problematical. It is logical to assume that it will make for higher prices, but it is well known in the paper trade that manufacturers are doing everything they can to keep prices on a stable level and prevent the market from reaching the heights where demand might be reduced.

Newsprint continues in an exceedingly strong market position. Gossip among members of the trade regarding an advance in print paper quotations is on the increase; it can be said that a majority look for a jump in price by the end of the second quarter of the year. Consumption of newsprint keeps up at a record level. Newspaper publishers are using paper in larger tonnage than ever before and the circulation campaigns of the past few months are bearing fruit, which means that newspaper circulation is on the increase. It is no easy matter to locate sizeable amounts of newsprint for spot shipment. Most mills are sold up for sometime ahead and have but small lots of paper to direct to the transient trade. In fact, such output as a majority of mills have above their contract commitments is generally disposed of without any difficulty at all to regular contract customers, thus leaving the transient buyer more or less out in the cold as regards available supplies.

Book papers are showing increasing activity. Demand is broadening and mills are steadily speeding up their production and are shipping out paper as quickly as it comes off the machines and is ready for shipment. Prices are firm and inclining upward. Average grades of machine finished book are selling at 7 cents a pound f.o.b. New York and higher, and super book is bringing about a quarter of a cent per pound above machine finished.

There has been some quieting down of demand for coarse papers but the movement into consuming channels nevertheless is good, and quotations are well maintained. Buyers apparently covered their requirements fairly freely during the pre-Easter season and are now holding off somewhat in further purchases, but mills are running full and have old orders on file which will keep them busy for a while.

Box boards are comparatively easy. Quotations hold at about last reported levels but the market is not characterized by as much firmness as recently, this being due chiefly to a sagging of demand from consumers, and in part to competition among manufacturers to get as full a share of the available business as they can. Plain chip board is quoted at about $60 a ton f.o.b. New York, and news board at the same figure. In some instances mills have taken orders at

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WOOD PULP AGENTS

as low as $57.50 on both chip and news, but this has been exceptional rather than the rule.

Fine papers are firm in price and are enjoying a broader demand than in several years. Taken as a whole, mills are not yet running at capacity but they are gradually creeping near to full production.

GROUND WOOD. — Reports generally tell of a good movement of mechanical pulp. It is plain to be seen that consumers are absorbing supplies in a restricted manner; that is, they are placing orders for limited amounts of pulp against actual and direct requirements, yet practically all the pulp being produced at present is being moved promptly to consuming centres so that the statistical position of the market is not weakened in the least. Quotations are on a broad range. As high as $45 a ton at grinding mills has been mentioned as a figure at which sales of domestic spruce ground wood has been sold, while Canadian producers are reported selling down to $35 a ton f.o.b. pulp plants. It would appear that the bulk of ground wood changing hands is bringing in the vicinity of $38 to $40 per ton, with a good many domestic manufacturers maintaining their price at around $42 and getting it.

CHEMICAL PULP. — News of the definite settlement of the pulp mill strike in Sweden has failed to have noticeable influence on the chemical pulp market here. The tone is just as strong as before and prices are firmly maintained; if anything, there is a tendency among sellers to boost prices a bit further. Importers are especially bullish in their views and are naming stiff prices on pulp they have to offer. It is felt that the Swedes will cancel a great many contracts for pulp during the next several months and that American consumers will consequently have to scour around elsewhere replacing the supplies which they expected to secure from Scandinavia.

Spot lots of No. 1 foreign unbleached sulphite have sold this week at 3.40 cents a pound ex dock New York, and Swedish kraft has brought 3.30 and 3.35 cents on the dock. Sales for forward shipment from the other side of the Atlantic have also been made at these prices. Foreign bleached sulphite is quoted at between 4.50 and 4.75 cents per pound ex dock, and choice grades are held for close to 5 cents. Domestic pulps are in improving demand and prices tend to strengthen owing to the firm position of imported pulp.

RAGS. — Most grades of papermaking rags are meeting with a steady demand of no mean dimensions. It is probably true that some consumers have let up in their buying to some extent lately but there is still enough demand to easily hold up prices and to create an active market condition. Dealers seem more willing to do business at what are recognized as prevailing market levels than they were; in other words, there is less inclination shown to hold out for higher prices, this being due presumably to the season of the year and expectations on the part of sellers that supplies of rags are likely to increase in the near future when spring collections begin to reach the market.

Roofing paper mills are buying in a fairly steady manner at prices ranging around 1.60 cents a pound at shipping points for mixed satinets and ex dock for foreign dark colored cottons. Old white rags are firm and are bringing anywhere from 7.50 cents a pound upwards for strictly No. 1 repacked, and around 4.50 cents for No. 2 repacked. Thirds and blues are moving freely at steady prices of about 2.75 cents per pound at shipping points for repacked and 2.25 cents for miscellaneous packing. No. 1 white shirt cuttings are quoted by New York dealers at 13.75 to 15 cents a pound f.o.b. this city, and other grades of new cuttings are holding their own in price notwithstanding that demand has eased off slightly from mills.

PAPER STOCK. — Easiness prevails in the paper stock market and the reason for it is rather difficult to explain other than that demand from consuming quarters has simmered down to quite a pronounced degree. Why mills have stopped buying is the puzzling feature. Board manufacturers are understood to be fairly busy yet they are not beginning to absorb old paper is normal amounts, and those that are buying are offering prices which have the effect of constantly reducing market levels. Low grades are particularly weak. No. 1 mixed paper has declined down to about 90 cents a hundred pounds f.o.b. New York, city mixed paper to 70 cents, and old folded newspapers to 1.10 cents a pound. Flat stock is off to around 2.20 cents a pound New York for heavy No. 1 magazines, and 1.95 cents for mixed books, and ledgers are down to about 2.65 cents per pound. Offerings of No. 1 soft white shavings at 3.50 cents a pound New York have been reported, and of No. 1 hard white shavings at 4.15 cents. Kraft paper is selling at 2.25 cents New York, and white blank news cuttings at the same figure or a trifle less.

OLD ROPE AND BAGGING. — Prices of old manila rope are steady at about 7 cents a pound at dealers' shipping points for No. 1 domestic rope, with foreign rope selling a little under this price basis. Demand is continuing and dealers say they are readily disposing of all the supply coming in. Old bagging is slow. Consumers are securing the small supplies wanted at very nearly their own prices, around 1.25 cents a pound at shipping points being quoted on No. 1 scrap bagging and 1.05 cents on roofing bagging.

SWEDISH LOCKOUT SETTLED

The following cable has been received by the Canadian Pulp and Paper Association from the Swedish Chemical Pulp Association.

"Lockout ended to-day (April 10th) Yearly production reduced through lockout 160,000 tons sulphite, 50,000 tons sulphate".

The news has been confirmed by the Swedish Consul in Montreal. Other cable advices received in New York state that there had been a hitch in the signing of the agreement, but that this was likely to be arranged in a very short time. The Swedish manufacturers, it was added, had fixed April 16 as the date of re-opening the mills.

The first-named cable states that the loss in production was 160,000 tons sulphite (176,000 short tons) and 50,000 tons sulphate (55,000 short tons). These figures are somewhat less than estimates made previously which were 200,000 tons sulphite and 67,000 tons sulphate. The estimates were based on the average monthly production during 1922.

It is evident, however, that there will be a considerable difference in the situation when navigation opens from the position last year. Stocks at the end of February 1922 were reported as 286,000 tons sulphite and 74,000 tons sulphate; at the end of February this year the stocks were 109,000 tons sulphite and 29,000 tons sulphate, a big reduction from twelve months ago.

The February report from the Association also stated that on March 1st there had been sold for future delivery 262,000 tons sulphite and 69,000 tons sulphate of which 50,000 tons sulphite and 52,000 tons sulphate were sold to the United States. In an article from the World's Paper Trade Review it is stated that buyers are likely to get two or three months concellation of their shipments of pulp in the opening of navigation.

MORE SELF-DETERMINATION

A Dutch scientist has discovered the existence in the heavens of a body 20,000,000,000 times larger than the sun. We understand that it is to be allowed to remain there for the time being.

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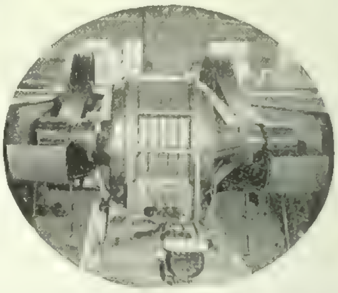

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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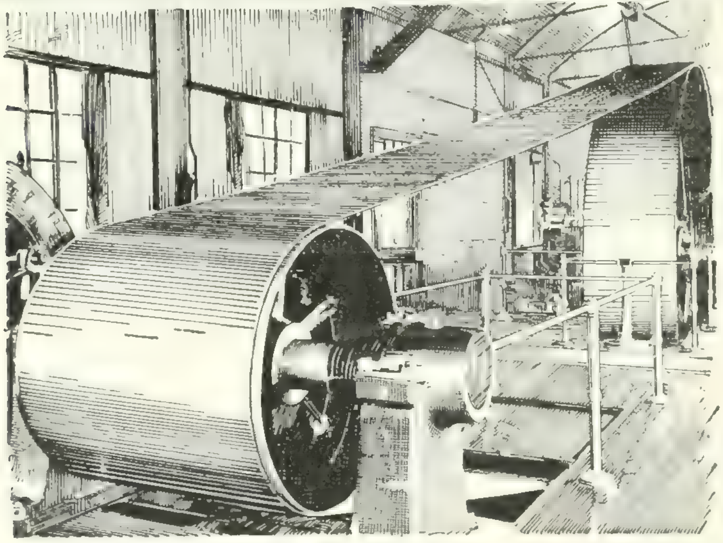

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:-: EDITORIAL :-:

CONCERTED ACTION COUNTS

So long as forest protection measures were matters of individual concern, practically no progress was made in fighting the ravages of fire in our great woodlands. With the formation of Fire Protective Associations, however, things began to improve and really remarkable progress has been made along these lines. There is still, however, a great lack of cooperation among the various provinces and the Federal government, which is really deplorable. The Forest Protective Association can go only just so far in the formulation and carrying out of voluntary action with regard to the protection of the forest. The various associations in Canada are, among themselves, in the same relative position as the individuals in the association. Furthermore, there are money owners and operators of woodland who do not come within the scope of any of these associations, and even if they did, their compliance with the regulations and rules of their association is entirely voluntary. It is true that a number of our provinces have made good progress in the matter of legislation for the management and protection of the forests, but there still remains a great deal to be done.

One of the most important features to be looked at for the future, and one which should be taken care of immediately is to establish a more effective common basis for the control of the forest. We need an interprovincial agreement tied in with federal regulations based on a workable program for the management of our forests, not only those owned by the government, but including also those owned by individuals. Nobody questions the right of a governing body to prohibit a man from putting ashes in a wooden box, and our municipalities do not hesitate to pass this legislation. A fire, started under such conditions, might cause the loss of perhaps as much as $10,000 to $20,000 worth of property! And yet our provincial and federal government sometimes hesitate to enact legislation which would prevent, or at least largely diminish, the chances for forest fires which not only would destroy many thousands of dollars worth of property, but would destroy the raw material with which our houses are built, and out of which our newspapers and many other products are manufactured. Not only is the material lost, but at the same time the opportunities for work are gone, and men are thrown out of employment. Perhaps even worse than that, the nation is losing an accumulated inheritance running back 50 to 150 years.

The approaching forestry conference to be held in Canada this summer will furnish an excellent opportunity for all of those interested in this vital matter to sit together and plan out a satisfactory program. The perpetuation of the forest is too vital a matter in the economic life of the Dominion to permit a further continuance of conditions whereby men who care nothing at all for the good of the country may hop about from one province to another where the law permits them to take an advantage over conscientious operators who really feel the necessity of maintaining our forest resources and are willing to contribute something toward that end, even at some inconvenience to themselves.

The recently published volume of 549 essays, submitted in the contest inaugurated by Mr. Frank Barnjum on the prohibition of the export of unmanufactured wood, prove very conclusively the need for concerted action in this most important matter of the protection of our forests, and that every available means should be put into force at the earliest possible moment. To do this effectively requires co-operative action. This must needs come through some sort of conference.

Our suggestion is that each provincial forestry department should immediately decide with its government on the maximum protective legislation which can be assured and the minimum which could be accepted. The Federal Government should do likewise. Accredited delegates should then sit in conference with power to outline a Dominion-wide program or, failing that, at least a program that would include eastern Canada.

FIRE PREVENTION IN ROUYN DISTRICT

Fire will be a very serious menace in the gold district of northwestern Quebec during the coming season. None realize this better than the officers of the Department of Lands, Forests and Mines in Quebec, who are responsible to the people for the preservation and proper use of the forests, and the owners of the timber and pulp-wood limits in the area affected. Both public and private property are threatened and must be protected.

Measures have been taken by the provincial government authorities for the prevention of forest fires in the Rouyn district next summer. These provisions seem to be eminently suitable to the case, as well as practicable. Their efficacy will depend mainly upon the manner in which they will be applied. Judging by the practical solicitude of the Quebec authorities for their forests as demonstrated in other instances, the enforcement of these preventive measures against fire will be strict and impartial. The Chief Forester for Quebec will have a big job on his hands next summer. One little forest fire will cost more than the upkeep of a whole staff of fire rangers.

The private companies owning timber and pulpwood limits in this area can, and no doubt will do much to aid the force of provincial fire rangers in protecting the forests from fire. These companies now use aeroplanes commonly, and a constant patrol over the areas congested with prospectors and miners will be a constant reminder of the personal responsibility that rests upon each man in the woods.

The key to the whole system of fire prevention is the fixing of personal responsibility. To this end the regulations of the Quebec government have been devised, and to this same end the efforts of their agents in the field will be directed. If every man entering the gold area, for whatever reason, is made fully to realize his responsibility, there will be few, if any forest fires. We hope that by this and other means the magnificent stand of pulpwood and the fine timber in this area may escape the havoc wrought by fire in most of the other mining districts in eastern Canada.

ANTI-CANADIAN PROPAGANDA

The London correspondent of the Montreal Gazette comments upon the statement by Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, in connection with the propaganda by representatives of some British firms in Australia against Canadian made goods. This propaganda is based on the allegation that certain products are made in factories and mills controlled by American capital — and in that sense are not truly Canadian. The agitation was and is particularly directed to pulp and paper shipped from this country. Mr. Howard Smith, during his visit to Australia, found a pretty strong prejudice against our goods, as the result of the propaganda, and has expressed the opinion that some of the methods adopted were unfair, to put it mildly.

The Gazette's correspondent reproduces some remarks by the President of the Australian Association of British manufacturers at its recent annual meeting in Melbourne. Commenting on the reciprocal tariff proposals by Canada to Australia the President urged that a reservation should be made according preference only to goods strictly of Dominion manufacture and not products of foreign-owned factories, these of course including pulp and paper.

It is a matter of common knowledge that American capital has played an important part in the development of the pulp and paper industry here just as British, French and Belgian capital has helped to foster other Canadian branches of commerce. That fact has nothing to do with the merits or price of the goods produced — and those, after all, are the only standards by which they should be judged. Canada welcomes the investment of outside capital. In a young country like Canada we are compelled to go outside our borders for financial aid in developing our resources, and those who urge discrimination against Canadian goods because of the origin of that aid are endeavoring to create a prejudice and a feeling which is antagonistic to the interests of the Empire as a whole.

British capital knows no country when there is an opportunity to obtain a good return on its investment; indeed Great Britain has built up a substantial part of her trade because of these world-wide investments, including some in Canadian Pulp and paper companies. Why therefore should there be any objection to American capitalists financing Canadian projects, in the same way that British capitalists are financing concerns in Canada and other parts of the world? Canadians, as a rule, prefer to see British capital invested here, but failing that they certainly will not refuse financial help from other sources. British companies have been invited again and again to build branch factories here, but with few exceptions, they have not seen their way to do this. There may be good reasons for this policy, but there are no valid reasons why certain manufacturers should attempt to prejudice Canadian goods because men of a different nationality have decided to manufacture here, employing Canadian labor and materials, and market the goods in various parts of the Empire.

It is rather difficult propaganda of the character referred to, especially when it is fostered by an association with headquarters in Australia. The visits of such men as Mr. Howard Smith is one way of meeting the situation, while our Government might also take means through its trade representatives to state very definitely the Canadian position. In the meantime there can be no doubt that the Canadian export trade is being unfairly assailed and that the agitation is calculated to injure our business — F.H.D.

COBWEBS

Don't forget your Income Tax. Returns must be in by April 30.

By the time this paper is in the mails the Unions will have voted on the offer of the paper manufacturers in reply to their demands. Both parties to the wage agreement have shown a commendable disposition to be as generous as possible and we trust there will be no break in the present good feeling in the industry. It would be unfortunate if there should be a sufficient rise in costs to require a rise in paper prices. This "follow my leader" game of boosting prices must stop somewhere, and if other industries tried as hard to stabilize things where they are as the newsprint manufacturers, we should have normal times, with confidence all round.

This is "Forest Protection Week" — but the forest will not be protected if protection stops this week. And don't **you** forget it!

THE CHOICE OF PRIME MOVERS FOR PAPER MILLS*

By F. O. L. CHORLTON

In view of the large quantity of coal used per ton of paper produced in the Paper Mill, and the high cost of fuel which still prevails, the problem of reducing the quantity is of perennial interest to the Papermaker. In the Paper Mill the whole of this coal is burnt beneath boilers for the production of steam which is used partly for the operation of the Prime Movers driving the plant, partly in preparation of the materials from which the paper is made, and partly for the drying of the paper after it is formed. Practically all of the steam used in the two latter operations can be employed at a lower pressure than that at which it is usually produced at the present day for use in Prime Movers, and as a certain amount of power can be obtained in the Prime Mover by the expansion from the higher pressure to the lower without serious detriment to its value as a carrier of heat, the question of its most economical utilisation in the Prime Mover is closely bound up with its after use for heating and boiling if the best overall result is to be secured.

The general review of this problem with suggested methods of obtaining the desired result was very ably put by Mr. Adamson in the paper which he recently read before you, and Messrs. Groundwater, Mallinson & Warburton have later given interesting views on special aspects of this problem which have an intimate connection with its solution. The paper which I am reading to-day is intended primarily as a development of Mr. Adamson's. I propose to take a more detailed view of what appears to be the most promising combinations of prime movers and exhaust utilisation schemes, apply to them accurate figures, and deduce from the result what appears to be the most favourable scheme for the particular conditions under consideration.

The necessary accuracy for the heat utilisation side of the problem can be obtained by use of steam tables and the Mollier diagram (of which I speak later), but to ensure that there could be no question as to the correctness of the other side involving the steam consumption per brake horse power per hour of the various Prime Movers under typical conditions, I thought it best to apply direct to the Makers themselves. For kindly obliging me with this information, I wish to thank the following firms: — Messrs. C. A. Parsons & Co., Metropolitan-Vickers, James Howden & Co., English Electric Co., John Musgrave & Sons, Sulzer Bros., Hick, Hargreaves, Pollit and Wigzell, Galloways, Yates & Thom, Brush Electrical Engineering Co., and Browett, Lindley & Co.

Complication of Modern Conditions

Thirty years ago the choice of Prime Movers was a simple matter, being practically limited to the horizontal Corliss or Slide Valve engine in large sizes and to very uneconomical slide valve engines in the smaller sizes. Coal was cheap, and little was thought about saving by the utilisation of exhaust steam for heating.

Now there is a far greater choice in Prime Movers; it is necessary to consider a number of alternatives for the transmission of power; for economical working the use of steam for heating and boiling is intimately bound up with its prior use for power production; and generally in every direction the working of the engineering side of the paper mill is enormously more complicated than in the old days, requiring for greater technical and theoretical knowledge to decide which arrangement or system meets the local requirements of the Mill in the most efficient manner.

Having to possess some knowledge of papermaking and papermaking machinery in addition, and being always saddled with the primary necessity of keeping the Mill running, it would be expecting more than is humanly possible of the Paper Mill Engineer that he should keep in touch with every new development in Prime Movers and acquire the theoretical knowledge necessary to analyse their performance.

In the present paper it is my object to do some of this analysis for him as far as it concerns the principal Prime Movers which are adapted to Paper Mill operation, and I hope the resulting simplification will be of some useful service.

The Mollier Diagram

To bring a number of varying examples working under different conditions to a common basis, at first sight would appear to call for an excessive amount of work, but we have to hand a very simple instrument for this purpose which is known as the "Mollier Diagram". To some of you it is not doubt familiar, but to the majority it may be merely a name. It is of the greatest service to the steam engine designer, and the design of steam turbines would present much difficulty without it. The Diagram is composed of a series of curves setting out the relation of the total heat contained in a unit weight of steam to its entropy when expanding without gain or loss of heat from any exterior source.

To make clear the method of using it I give a rough copy of the Diagram with this paper. More elaborate and correct copies accompany "Steam Tables and Diagrams", by Marks & Davis, and "Steam Turbines," by W. J. Goudie, both published by Longmans, Green & Co., and an article on "A New Theory of the Steam Turbine," by H. M. Martin, published in "Engineering" of July 5th, 1918. You will notice that the total heat contained in one pound of the mixture is measured vertically ,and the entropy horizontally, while diagonally across the diagram run a number of flat curves representing steam at various pressures, and again crossing these at an angle are other curves giving the quality of the mixture as regards its percentage of dryness or degree of superheat.

The expansion in a steam engine or turbine is assumed to be adiabatic, that is, no heat, is received from or lost to any external source. Actually, this is, of

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* An abstract reprinted from a bulletin of the Paper Makers' Association of Great Britain and Ireland.

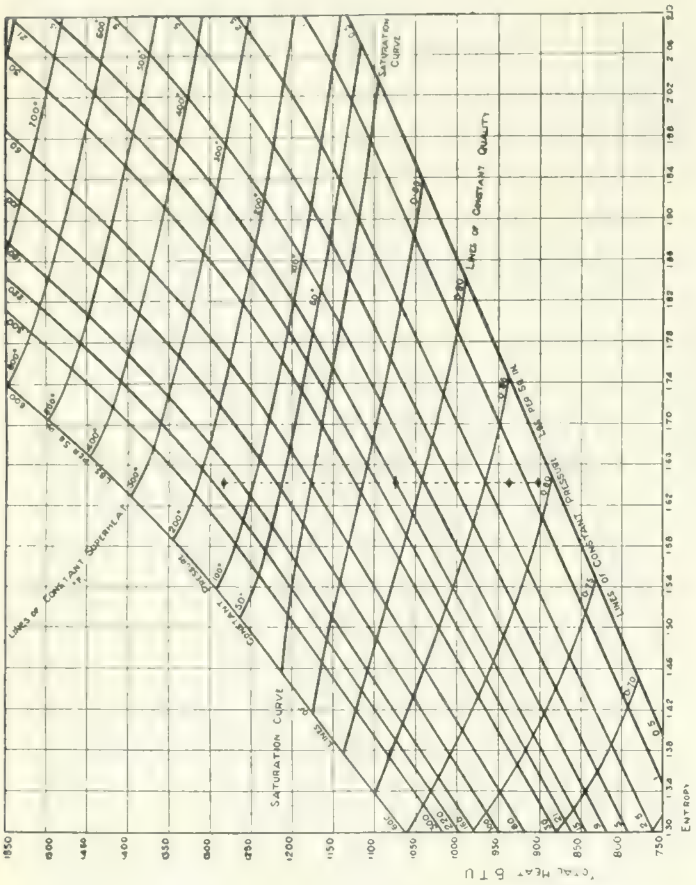
Saturation Curve
Lines of Constant Quality
Lines of Constant Superheat
Lines of Constant Pressure
Constant Pressure
Saturation Curve
Entropy
Total Heat B T U

Fig 1 The Mollier Diagram

course, not quite correct, but in practice the deviation from theory is included in the losses expressed in the difference between the theoretically perfect engine, the performance of which we get from the diagram, and the actual working engine or turbine. This adiabatic expansion corresponds to a fixed entropy, and the expansion is, therefore, down a vertical line. By referring to the scale of total heat at the left hand side the quantity of heat made available as work at once becomes evident by tracing down the vertical line, from the initial state of the steam, to whatever point we like to carry the expansion.

Heat units, as you know, are readily converted to foot pounds of work, and by dividing the heat units which we find from the diagram are available as work into 2551, which is the constant correlating the heat to the horse power, we get the steam consumption of a theoretically perfect steam engine working on the Rankine cycle in pounds per horse power hour. The actual engine or turbine does not reach this figure, and we call the percentage ratio of the actual performance to the theoretical figure the Rankine efficiency.

This efficiency figure is very useful, not only as a basis of comparison between one type of Prime Mover and another, but as it varies very little for a particular design over a large range of steam and exhaust conditions, it enables us, by holding one or two steam consumption tests, to place the steam consumption for any neighbouring range of conditions without fear of inaccuracy.

In the application of the foregoing to actual cases I propose to take first of all the typical four machine news mill used by Mr. Adamson as an example in his paper. Secondly, a mill producing higher class paper with a large consumption of steam for grass or rag boiling.

Conditions of Working

I have assumed the following conditions throughout as being typical of a modern mill.

Steam Consumption and Efficiencies.—Table 1

Steam pressure	180 lbs. gauge
Superheat	150° F.
Steam pressure in exhaust main for grass boiling	50 lbs. gauge
Steam pressure in exhaust main for drying cylinders	15 lbs. gauge
Vaccum for steam turbines	28.4 inches
Vacuum for reciprocating engines.	27 inches
Steam consumption of Steam Turbine to 28.4 in. vacuum per b.h.p. hour	10 lbs.
Efficiency compared to Rankine cycle	68%
Steam consumption of Steam Turbine to 15 lbs. gauge	25 lbs.
Efficiency compared to Rankine cycle	64.5%
Steam consumption of Steam Turbine to 50 lbs. gauge	41 lbs.
Efficiency compared to Rankine cycle	62%
Steam consumption all types Reciprocating Engines to 27″ vacuum	11.3 lbs.
Efficiency compared to Rankine cycle	65.2%
Steam consumption all types Reciprocating Engines to 15 lbs. gauge	19.5 lbs.
Efficiency compared to Rankine cycle	81.6%
Steam consumption all types Reciprocating Engines to 50 lbs. gauge	31 lbs.
Efficiency compared to Rankine cycle	82.5%
Steam consumption compound variable speed engine to 15 lbs. gauge	20.5 lbs.
Efficiency compared to Rankine cycle	77.5%

The steam pressure and superheat are such as are likely to be adopted for any modern mill.

The pressure of 50 lbs. for the exhaust main supplying the grass-boiling, etc., is such as is actually in use in mills using exhaust steam for this purpose. No doubt this will vary in different mills, but the adoption of a slightly different figure would not make any material difference in our comparison. The pressure of 15 lbs. at the Prime Mover is a suitable one for the drying cylinders. In this connection, although the same pressure is taken both for the engines driving the paper machines and for the extraction turbine or reciprocating engine, the former would actually have a decided advantage owing to the shorter exhaust pipes between the engines and the paper machines.

A higher vacuum is taken for the steam turbine than for the reciprocating engines, as it is able to make better use of it. It will be noted, however, that the Rankine efficiency of the turbine is only a little better than the reciprocating engines, and if the vacuum falls to 27″ it will be practically on the same basis.

The steam consumption figures for the turbines are fairly representative of those having the greatest experience of back pressure conditions and paper mill work.

In regard to the reciprocating engines the steam consumptions for condensing conditions are remarkably alike, and are to all intents and purposes the same for the single cylinder Uniflow, the two cylinder compound Corliss or Drop Valve Engine and the triple expansion High Speed Engine. They agree very well with my own records. As regards the consumptions against a back pressure, I am able to check the figures by a large number of tests carried out at our works, many under entirely independent supervision. The ordinary compound variable speed engines of about 150 horse power easily obtain a Rankine efficiency of 78%, and I think 4% higher than this for engines of 1,000 to 1,500 horse power is not rating them too highly. Some of the figures given me are considerably better than this.

It is convenient to make the comparison in heat units, and I give below some of the necessary figures in the form of a table.

Heat Units in Steam.—Table II

Heat units in 1 lb. of steam at 180 lbs. gauge and 150° F. superheat	1282
Heat units in 1 lb. of steam expanded adiabatically to 50 lbs. gauge	1182
Heat units in 1 lb. of steam expanded adiabatically to 15 lbs. gauge	1122
Heat units assumed to be in 1 lb. of steam at 50 lbs. gauge when exhausted by turbine	1196
Heat units assumed to be in 1 lb. of steam when exhausted by reciprocating engine	1191
Heat units assumed to be in 1 lb. of steam at 15 lbs. gauge when exhausted by turbine	1151
Heat units assumed to be in 1 lb. of steam when exhausted by reciprocating engine	1137
Heat units assumed to be in 1 lb. of steam compound variable speed machine engine	1140
Heat units in 1 lb. of hot water from drying cylinders used as feed to boilers	170
Heat units in 1 lb. condensing water from steam turbine used as feed to boilers	60
Heat units in 1 lb. condensing water from reciprocating engine	80
Heat units in 1 lb. steam taken from boiler at 180 lbs. gauge and 150° F. Superheat reduced by reducing valve to 15 lbs. gauge	1282
Heat units in 1 lb. water at 15 lbs. gauge and steam temperature	218
Heat units in 1 lb. water at 50 lbs. gauge and steam temperature	266
Heat units per lb. given up in drying cylinders by 1 lb. steam from steam turbine, 1151—218	933
Heat units per lb. given up in drying cylinders by 1 lb. steam from reciprocating engine, 1137—218	919
Heat units per lb. given up in drying cylinders by 1 lb. steam from machine engine, 1140—218	922
Heat units per lb. given up in drying cylinders by 1 lb. steam direct from boiler 1282—218	1064
Heat units given up in digesters by 1 lb. steam from steam turbine, 1196—266	930
Heat units given up in digesters by 1 lb. steam from reciprocating engine, 1191—266	925

The first three items are taken from the Mollier Diagram.

If the prime movers were perfect machines the figures given for the heat units contained in 1 lb. of steam after adiabatic expansion to 50 lbs. and 15 lbs. respectively would be correct for estimating the heat value of the exhaust steam. They are not perfect machines, however, and do not extract the full amount of heat from the steam. Each pound of exhaust steam, therefore, contains a greater number of heat units than the theoretical. I have assumed that half the difference between the perfect and actual machines remains in the steam, thus giving a slight advantage to the steam turbine from its inferiority in this respect. The next five items of the table give these assumed figures.

The remaining items give the figures necessary to credit each scheme with the heat returned to the boilers, and following these the heat units per 1 lb. of steam, from each source available, when condensed in the drying cylinders, and in the rag or grass boilers.

Alternate Schemes for News Mill

The possible arrangements which it appears to me it is desirable to consider are:—

Mechanical

Scheme I.—Reciprocating condensing engine for beaters, high speed steam engines for machines and refiners, with deficiency in steam for cylinders direct from boilers.

Scheme II.—Steam turbine for beaters, high speed steam engines for machines and refiners, with deficiency in steam for cylinders direct from boilers.

Scheme III.—As I., but with deficiency in steam for cylinders extracted from beater engine.

Scheme IV.—As II,, but with deficiency in steam for cylinders extracted from turbine.

Scheme V.—As III., but with non-lubricated machine engines.

Electrical

Scheme VI.—Reciprocating combined extraction and condensing engine driving beaters. Similar engine driving generator (this can be combined with the supply to auxiliaries), sectional electric drive to machines. Steam for drying cylinders extracted from engines.

Scheme VII.—As VI., but with steam turbines instead of reciprocating engines.

For Mr. Adamson's typical News Mill I am taking the following figures:—

Table IV

Production of paper per hour, lbs.	16000
Heat units required for drying 1 lb. paper	3500
Heat units required for drying 16,000 lbs. per hour	56,000,000
Power required for beaters measured at engine, b.h.p.	1200
Power required for machines and refiners at machine, h. p.	1800

The above may be varied considerably without affecting our comparison of the schemes provided they are the same for each scheme.

Table V

Efficiency of Main Generator	93 %
Efficiency of Section Motors	85 %
Efficiency of Cables	98 %
Overall Efficiency of above	77.5%
Efficiency of Mechanical Drive	86 %

Taking Scheme I in detail, the power required at the machine engines is $1800 \times \frac{100}{86} = 2093$ b.h.p. At a steam consumption of 20.5 lbs. per b.h.p. 1 hour we get a total steam consumption in lbs. of 43,006; in heat units 43,006 x 1282 = 55,133,692.

Now each pound of steam exhausted from the engine contains 1,140 units, and gives up 922 heat units in the drying cylinders, or a total of 43,006 x 922 = 39,651,532, which, deducted from the requirements of the drying cylinders, 56,000,000, gives 16,348,468 to be supplied direct from the boiler. As each pound from the bonler gives up 1,064 units, 15,365 lbs. of steam are wanted.

The beater engine of 1,200 b.h.p. requires 1,200 x 11.3 = 13,560 lbs. of steam per hour, or 13,560 x 1,282 = 17,383,920 heat units.

Collecting the above, we have:—

Heat units to machine engines	55,135,692
Deficiency from boilers for Drying Cylinders	16,348,468
Heat units to beater engine	17,383,920
Total	88,866,080

From this must be deducted the heat contained in the water used as feed for the boilers:—

$43,006 + 15,365 \times 170 + 13,560 \times 80 = 11,007,870$

Nett heat units used in Scheme I. 77,858,210

The other scheme have been worked out in the same manner, and I give below the result, together with the pounds of coal required per hour on the assumption that each pound burnt gives steam to the value of 8,000 heat units.

Table III

Nett Consumption in Heat Units and Coal of Schemes I to VI

	B. Th. U. per hour	Coal lbs. per hour
Mechanical		
Scheme I.	77,858,210	9,732
Scheme II.	76,415,300	9,552
Scheme III.	71,515,348	8,939
Scheme IV.	73,404,916	9,175
Scheme V.	74,542,000	9,318
Electrical		
Scheme VI.	73,166,226	9,146
Scheme VII.	80,454,192	10,057
A	75,611,094	9,451
B	82,653,792	10,332
C	93,850,660	11,731

Under the conditions we have assumed for our Mill, it will, therefore, be seen that Scheme III, with the machine driven by enclosed high speed engines and the beaters by a reciprocating engine, from which is extracted the deficiency in steam for the drying cylinders, turns out the most economical.

Effect of Different Conditions.—Fig. 2

As a matter of general interest, I have added three other items to the table. (A) The heat units required for the All Electric Drive (including beaters) with reciprocating engines as Prime Movers; (B) the same as (A), but with steam turbines as Prime Movers; (C) the same as (B), but with the steam for the drying cylinders taken direct from the boilers.

In making these calculations I have not gone quite so far as Mr. Mallinson in attributing a difference of 20% against the electrical drive for the beaters. I have taken 15% only.

It will probably be said that the above results depend largely upon the conditions assumed. To illustrate the influence of the conditions I have prepared a diagram (Fig. 2), which shows the effect obtained by taking different outputs of paper (and therefore the quantity of steam required in the drying cylinders) while keeping the power to drive the machines and beaters the same.

An inspection of the diagram shows some interesting points. It will be noticed, for instance, that at the point where the exhaust from the machine and backshaft engines just meets the requirements of the drying cylinders, the lowest point is reached in all the schemes which include steam engines to drive the machines.

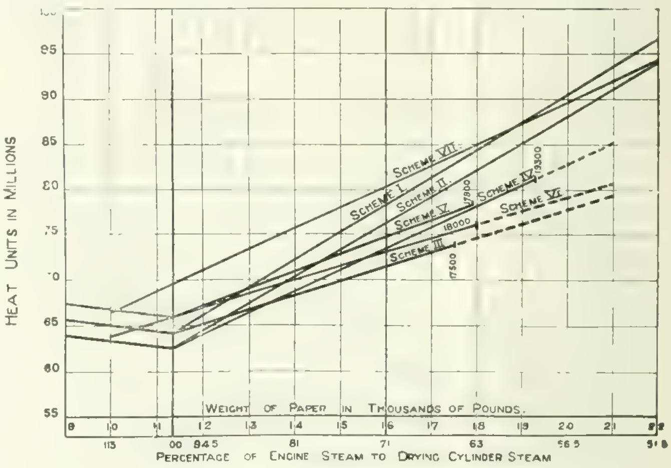

FIG 2 HEAT CONSUMPTION FOR NEWS MILLS

If the range is not much to the right of the balance point, Scheme II, where the beaters are driven by a turbine and any deficiency in drying steam is taken direct from the boilers, does not show to much disadvantage against any other arrangement. Having regard to its simplicity it may be still preferred to the installation of the complicated devices which are necessary to enable extraction schemes to be worked. This condition is, I think, the one prevailing in this country, and those in charge of such mills will be, no doubt, relieved to find that the method on which they are operating is well to the front. Beyond this point, there is no doubt that Scheme III., where the beater engine is of the reciprocating extraction type, is ahead of any other system.

The turbo electric drive, Scheme VI., is rather a long way behind, and if to it is added an electric drive to the beaters, it places itself in a hopeless position.

The Problem for Other Mills

The economy problem for a news mill with a standardised product, rarely changed, and with machines running at their maximum speed from day to day, is a fairly simple one. When we come, however, to the Mill making better class papers, we find a very different position. It is more difficult to deal with, but as it is the one which is of primary interest to the majority of you. I have endeavoured to formulate general cases which are sufficiently applicable to the majority of Mills to be of some practical use.

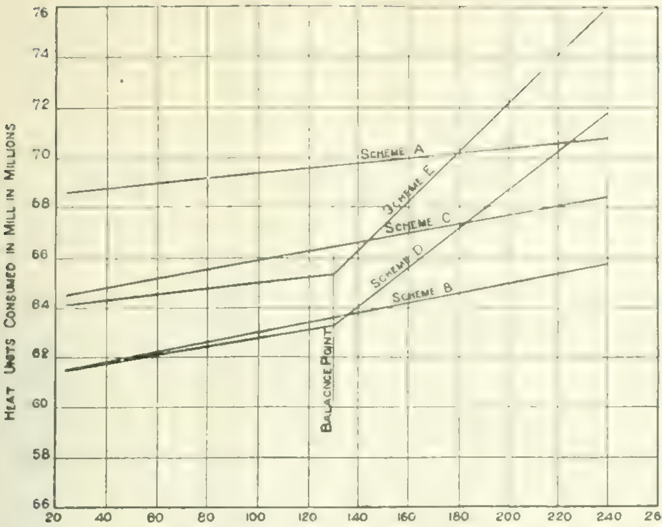

Fig 3 Heat Consumption for Paper Mill Case I

The Mills with which I now propose to deal are those using a proportion of Rags or Esparto in their raw material, which require a considerable amount of steam for digestion or boiling in the preparatory stages. The percentage of these in the finished paper varies greatly. The length of time and consumption of power for beating also vary, and the speed and, therefore, the power to drive the paper machines is very different for different classes of paper.

Fortunately there is one point in our favour, i.e., the output of paper by weight from a given paper machine is fairly constant whatever the speed, and if the preparation plant is of ample capacity to supply all the machine will absorb the total mill output by weight will be constant also. I am afraid this statement will not entirely meet with your agreement, but if what Mr. Mallinson said, when reading his recent paper on "Electric Driving in the Paper Mill," is right, and I think myself it must be substantially correct, it necessarily follows.

Mr. Mallinson stated that the steam which the drying cylinders could absorb was a constant quantity whatever the speed. Therefore, since the ratio of steam per pound of paper is also approximately constant, the output by weight of the machine must be a fixed figure, and dependent entirely upon the diameter width and number of the drying cylinders. This is, of course, assuming that the machine is always run at such a speed that the drying capacity is fully utilised, and that the output is not restricted by any deficiencies in the preparation of the stuff.

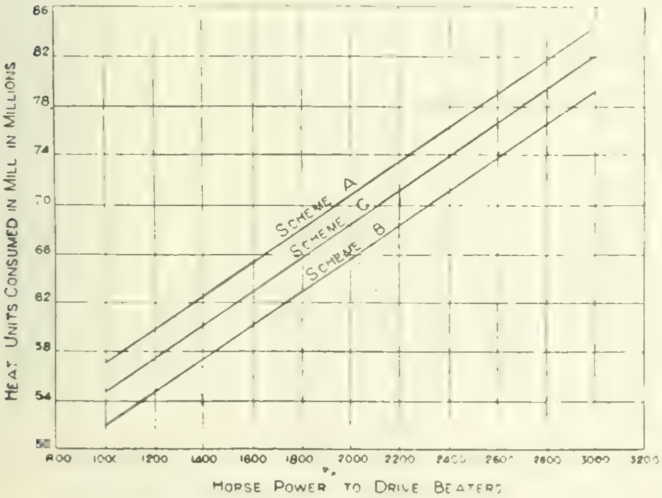

Fig 4 Heat Consumption in Paper Mill Case II

I propose, therefore, to take a representative Mill using Esparto, and assume that its output is constant. For Case I. (Fig. 3) the steam used in the preparation, the power for beating, and the steam in the drying cylinders are taken as being unaltered, while the machines run at different speeds throughout their range of 10 to 1.

For Case II. (Fig. 4) the steam used in the preparation and in drying is constant, and the machines are run at their maximum speed only, while the power for beating is taken over a range of, say, 3 to 1.

For Case III. (Fig. 5) the steam used for preparation is the only variable, say, over a 4 to 1 range; the other items being constant.

I have taken an extensive range in each case so as to cover as many mills as possible.

Proposed Methods of Operation

It is unnecessary to apply to each case the whole of the schemes already considered in connection with the News Mill, but to properly illustrate the gain to be made by passing all heated or boiling steam through an engine or turbine before its eventual use, I propose taking for Scheme A the system, in general operation, of running the machines by steam engines, exhausting to the drying cylinders, with the deficiency supplied direct from the boilers; independently driving the beaters (by reciprocating engines) and using live steam for digesting purposes.

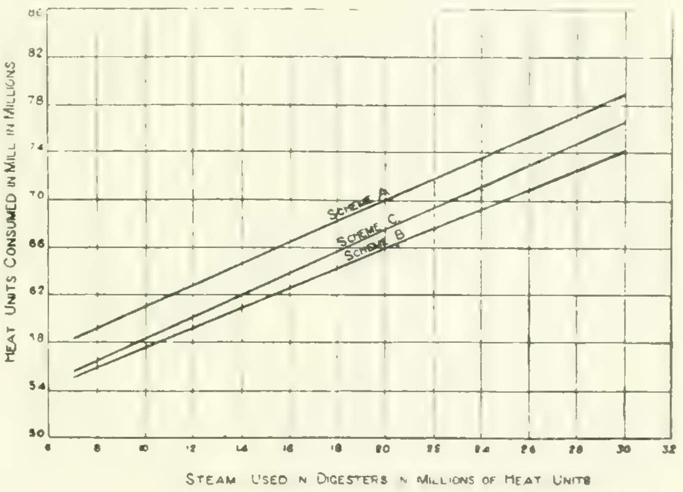

Fig 5 Heat Consumption in Paper Mill Case III

Scheme B is similar to Scheme III. in the News Mills, but extracting steam also from the beater engine for the digesters.

Scheme C is the turbo electric drive (but with direct driven beaters) extracting steam from the turbine both for the machines and grass boiling.

Scheme D is a modern system something similar to that in use at, least at one mill where a large quantity of steam is extracted at 50 lbs. pressure from the main beater engine to supply the digesters, and also to supply machine engines working at a comparatively low pressure, the exhaust from these being utilised in the drying cylinders. Additional steam is extracted from the engine at 15 lbs. to meet the deficiency in the drying cylinders and any other purposes such as heating the mill.

Scheme E is similar to Scheme D, but with a steam turbine to drive the beaters instead of a reciprocating engine following the same method of operating the machines.

The mill which I suggest as the subject of the investigation is a four machine Esparto Mill having an output of 4,000 lbs. of finished paper per hour.

Table VI

Output of paper per hour	4,000 lbs.
Total power to drive Machines and Backshafts measured at machine.	
Maximum speed	400 b.h.p.
Minimum speed	150 b.h.p.
Total horse power for beating	300 to 1,000 b.h.p.
Do. for auxiliaries	600 b.h.p.
Heat value of steam to drying cylinders per hour	15,000,000 units.
Heat value for grass boiling and soda recovery per hour	7,000,000 to 30,000,000 units.
Heat value of steam heating Mill per hour	500,000 units.
Steam pressure at boilers	180 lbs. gauge.
Superheat	150°F.
Steam pressure for grass boiling....	50 lbs. gauge.
Do. for drying cylinders..	15 lbs. gauge.

The steam consumption, Rankine efficiencies, etc., are taken as for the News Mill.

The method of carrying out the cadculations is on similar lines to that used in preparing Fig. 2.

Comments on Diagrams

An examination of the diagrams shows Scheme B. comprising an extraction reciprocating steam engine for the beaters, with compound reciprocating engines for the paper machines to hold a material advantage throughout. Schemes C. and A. take the same relative positions in each diagram, the common system as adopted in Scheme A. having the largest consumption. In the calculations for Scheme A. the full boiler pressure of 180 lbs. reduced to 50 lbs. is taken for the digester supply, and it may be thought that if produced at 50 lbs. in low pressure boilers some advantage would be obtained. This is not the case, however, the result being precisely the same.

Referring to Fig. 3, Scheme D., the line closely corresponds to Scheme B. up to the point at which the steam exhausted from the machine engines, just balances the requirements of the drying cylinders. This is as would be expected because of the small difference between the Rankine efficiencies of the machine and beater engines.

Beyond this point, owing to there being an excess of exhaust steam from the machine engines, the heat consumption increases at a very rapid rate.

Under some conditions where the power to drive the machines is not very great this might not occur, but in view of the serious loss which results from a relatively small amount of excess steam and the small gain otherwise, this scheme shows to some disadvantage as compared with Scheme B.

The large amount of steam which this system also requires to be extracted from the main Prime Movers, does not permit of quite the same efficient design as would a smaller amount, when worked in conjunction with compound machine engines supplied direct from the boilers.

Scheme E including a steam turbine as the main Prime Mover follows the same lines as Scheme D with the additional disadvantage due to its lower Rankine efficiency when exhausting against a back pressure. The same arguments apply to it.

From the foregoing analysis of the different schemes of working, it appears fairly obvious that the one giving the greatest all-round economy under different conditions is that comprising independent enclosed compound variable speed engines for the machines, utilising the exhaust from them for the drying cylinders, with reciprocating engines for the beater driving, extracting from them, as far as possible, the steam for grass and rag boiling, and deficiency required in the drying cylinders, and such steam as is necessary for heating the Mill.

NEW BRUNSWICK NEWS

Hollingsworth and Whitney of Boston, have purchased eight properties in St. Stephen N. B. and plan on securing several other properties in the near future, preparatory to the building of a large pulp and paper mill. The building of this mill has been a much discussed subject for the past year along the Maine and New Brunswick border. Reports have been current of the intention of Hollingsworth and Whitney to build a mill at the border, but the precise location was not disclosed. As a matter of fact, the company had not decided whether to build on the Maine side or the New Brunswick side. However, after investigating the different sites on which the company had options, St. Stephen was chosen as the site.

The company has also secured the water power privileges on the St. Croix river at Milltown, and has options on lands at Milltown. In addition, agents of Hollingsworth and Whitney have purchased land at Moore's Mills, near St. Stephen. There at least two storage dams will be constructed, and much of the land, flooded. Building operations may not be started until 1924, the company having made no announcement as yet regarding a definite date for the start. Messrs. Thayer and Madden who are representing Hollingsworth and Whitney at St. Stephen, are reticent as to the plans of the company. Hollingsworth and Whitney operate a large paper milll at Waterville, Me. One of the St. Stephen properties acquired by the agents of the firm, is one covering one hundred and fifty acres which had served as a golf links.

The International Paper Company, which attributes a loss during 1922, to buying of pulpwood at war rates, may increase its holdings in New Brunswick following the recent visit to New Brunswick of P. T. Dodge the president. Mr. Dodge conferred with Premier Veniot of the province in a final attempt to convert the government to the plan of allowing the International Paper Company a renewal of the water power rights at Grand Falls. As a matter of fact, the government had already contracted for the sale of one million dollars in bonds to start preliminary work on the hydro electric station at Grand Falls. — McN.

RESEARCH*

IN CONNECTION WITH THE MOND NICKEL COMPANY'S OPERATIONS

By C. V. CORLESS**

Outline of Operations

Since there may be some present who have only a very general knowledge of the mining companies operating in Northern Ontario, I will preface my remarks on research by such general statements regarding the Mond Nickel Company's operations as may throw light on later references to these.

The Mond Nickel Company, with head office in London, England, is the second largest producer of nickel in existence. It operates a number of mines and a reduction plant in the Sudbury District; refineries in the United Kingdom; a rolling-mill for nickel and one for nickel alloys, together with some other allied plants, in Birmingham, England; and has an interest in a rolling-mill in Clearfield, Pennsylvania.

All the ores produced in the Sudbury nickel area are sulphides of nickel, copper and iron (known technically as pentlandite, chalcopyrite and pyrrhotite), mixed with varying amounts of rock matter, and containing minute quantities of the precious metals and rare metals of the platinum group.

The Company's reduction plant, which is a few miles east of Sudbury, at Coniston, on the Canadian Pacific and Canadian National Railways, consists of a smelter, a sintering plant, and a concentrating mill. The final product of this reduction plant is bessemer matte, containing over 80 per cent. of nickel and copper, 14 or 15 per cent. of sulphur, a varying percentage of oxygen, a few tenths of a per cent. of iron, and small amounts of precious and rare metals, much too small to be expressed significantly in percentages.

This bessemer matte is shipped to the Company's refinery at Clydach in the Swansea Valley of South Wales, an important metallurgical center. Here the nickel and copper are separated, the former being refined by the carbonyl or Mond process which yields the purest nickel sold (99.8 to 99.9 per cent. nickel) and the latter being sold as copper sulphate, chiefly as an insecticide and fungicide for use in the vineyards of Southern Europe. The residues from this refining process, containing the minute proportions of the precious metals, (gold and silver) and of the rare metals of the platinum group (platinum, palladium, iridium, rhodium and ruthenium) are separated and refined at the Company's plant in London.

Uses of Nickel

As is well known, nickel finds a very wide market as an alloying metal, chiefly with steel, but also with copper, chromium, manganese, and a number of other metals. Owing to the unique and valuable properties of nickel, it is finding wide uses in the manufacture of containers, utensils, piping, wire, machinery parts, scientific and industrial apparatus, etc., where its peculiar combination of properties, viz., great strength, capacity for receiving and retaining a high polish, great resistance to corrosion, abrasion and oxidation, or other special qualities, are required. It is also used extensively in electroplating, for coinage purposes, and as a catalyst in certain reactions in industrial chemistry, besides having a large number of miscellaneous uses.

The Company has spent and is spending large sums of money in studying the physical and chemical properties, in investigating the best methods of manufacture, and in searching out the widest and most suitable fields for use, of nickel and its alloys. Some of these investigations are carried out at the plants in Birmingham and Clearfield already mentioned.

Use of Research in Connection with Ordinary Operations

It perhaps need hardly be said that each of the plants mentioned has its chemical laboratory. The laboratory is the handmaid of every metallurgical process from the milling and smelting of the ore, through the various steps in further reduction and refining of the metals, and onward into the manufacture of the metal into sheets, bars, wire, tubes, etc., whether these are of pure nickel or of nickel alloys. In investigating these final forms, so as best to adapt the metal or alloy to the particular use for which it is intended, frequent physical tests are applied; for example, tests for electrical resistance, tensile strength, brinell hardness, etc. These tests have to be correlated with both the chemical composition of the metal and the physical and mechanical treatment the metal has received. Half a dozen or more chemical laboratories, with some of the less expensive apparatus for physical testing, are in constant use at every stage between mine and consumer. Some of the larger physical and mechanical tests, which are used less frequently, requiring very costly apparatus, are made, when advisable, in University or other similar laboratories for testing such materials.

It is not the purpose of a brief non-technical paper, such as the present, to do more than to give a broad outline of the place of research in a mining and metallurgical industry and to indicate the indispensability of accurate and systematic chemical analysis, physical testing, observation, recording of data, and of correlation and drawing of reliable conclusions from a close study of them, which, with the applied scientist, is one form of research. Without this continuous, pains-taking, systematic, detailed following up of daily metallurgical operation; without the most careful study and correlation of the masses of accurate data by scientifically trained men who devote their time to this work; without the drawing of conclusions based on these studies, which sometimes extend over many months; and unless these studies result in decisions to make operating experiments, frequently on a full working scale; there would be but little metallurgical progress.

Special Industrial Research — Origin of the Mond or Carbonyl Process

But there is a further important aspect of industrial research, well illustrated by the early development of the refining process used by the Mond Nickel Company, which is known as the Mond or carbonyl process for refining nickel. The story of this development is probably familiar to any metallurgists present. Since it may not be so well known by others, I will briefly outline it.

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* From an address given before Research Conference in Ottawa on Feb. 21st.

** Director and Manager of The Mond Nickel Company, Ltd.

In laboratories having as their chief aim the application of scientific discoveries to industry, quite frequently important discoveries are made in pure science. Research men in such laboratories keep abreast of advances in science just as do others engaged in research work merely for the advancement of knowledge. When such purely scientific discoveries are made, after verification, they usually find their way through the ordinary channels to the general stores of scientific knowledge. Sometimes unexpected phenomena are observed which it may be necessary merely to note "en passant". These phenomena may form the starting point of fresh researches into their scientific meaning and into their practical application, if any.

It was thus in Dr. Mond's laboratory in England that a scientific discovery was made which formed the starting point of the carbonyl process for refining nickel. A mixture of hydrogen and carbon was being passed over heated, finely divided nickel in order to remove the carbon monoxide. To obviate danger from the poisonous monoxide, the escaping gas was ignited. As the apparatus cooled it was observed that the burning of the escaping gas produced a luminous flame which deposited a film of nickel on cold porcelain, very similar in appearance to the well-known arsenic mirror used as a test for the latter metal. A test showed this deposit to be pure nickel and further investigation revealed the existence of a hitherto unknown compound of nickel and carbon monoxide, $Ni(CO)_4$, which received the name nickel carbonyl. This compound is formed by passing carbon monoxide over metallic nickel at about 50° C. but is again completely decomposed into nickel and carbon monoxide when heated to 150° C. or higher.

These are scientific facts. As such they merely increased the sum of human knowledge. They were discovered incidentally in the course of research carried on with ultimate industrial aim. But in the fertile brains of Dr. Mond and Dr. Langer — both men gifted with scientific imagination and indomitable determination, the one having already won by previous investigations and applications of science to industry practically unlimited capital which enabled him to back the other, who had deep scientific insight combined with great originality and inventive genius — in this fertile soil, these scientific facts proved to be seeds that quickly germinated. But though the germination was quick, full development required much time, faith, courage and will. There followed a period of more than ten years of patient research, invention and construction, during which boundless faith, a faith which was literally "the evidence of things not seen" except in scientific imagination, was the impelling force. Finally an ore body was bought in the Sudbury District, three thousand miles distant, at a time when the future of the district was by no means assured; a mine was developed; a smelter built; in order to test the commercial value of the new process. This was nearly twenty five years ago. I need only add that since then ample ore reserves have been secured, a new and more adequate reduction plant has been built, and the carbonyl process is now annually producing as a refined product thousands of tons of the purest nickel marketed.

It might be difficult to find a better illustration of the great importance of research to any nation whose people have the ambition to rise above the economic status of being "hewers of wood and drawers of water" among the nations of the earth. It is scarcely necessary to add that those responsible for the conduct of a business born of scientific research, developed by scientific research, nurtured by scientific research, and making every step in its progress by scientific research, naturally regard scientific research as the key stone of success in production or in material progress in any direction.

The Scope of Scientific Research

But I should like to add a few words in criticism of a tendency to narrow the use of the term scientific research to laboratory dimensions.

The crucial elements of scientific research, to my way of thinking, are: accurate observation; when necessary, assistance to observation by carefully planned testing or experimenting under known conditions; accurate recording of observed phenomena or facts observed, with correlation of the phenomena or facts observed, with other known facts or laws; if possible, clear interpretation of the observations; and, whenever possible, further testing of the interpretation. The search for new phenomena, new facts, or a new natural law may be among the stars, in the crust of the earth, within a chemical or physical atom, in human society, on a farm or in a garden, in an animate body or one of its organs, in the human brain or the mind itself — it matters not what the field — nor does it even matter what the ultimate motive — provided that the search will stand these tests, it becomes scientific research. This is the most powerful method yet discovered for solving our problems and making intellectual and material progress. It is equally applicable to the discovery of the phenomena and laws of nature, made with no ulterior motive beyond the advancement of knowledge; and to the discovery of the application of these laws in industry, with possibly a somewhat sordid immediate motive, but with the ultimate end in each case that human knowledge is broadened and humanity itself benefitted. It is the intelligence and intellectual honesty, rather than the motive, of the investigator, that determines whether or not a given investigation is properly to be classed as scientific research. Probably few scientific specialists engaged in research ever stop to analyze their own motives or to consider how complex these really are. If a research adds to the sum of accurate organized or organizable knowledge, it may, thus far, I think, properly be classed as scientific, even though it may be industrial in its aim. More and more as the domain of science widens is it found that accurate knowledge of almost every description finds a place in the scheme.

Cultivate the Impulse for Research

This method of inquiry should be widely inculcated. It should become a national habit of mind. Indeed, the chief intellectual aim of educational institutions should be to fix in the minds of as large a percentage as possible of those passing through them this habit of inquiry, with insight into the means of satisfying it. The farmer who plants two similar measured plots of ground, one having a single altered condition, the other serving as a control; who keeps an accurate record of the result; and who draws a reliable inference from the experiment; is pursuing scientific research as surely though not as importantly, as is the physicist who, through the liquefaction of helium, achieves the closest approach to absolute zero yet made; or as is the graduate in medicine, working in a pathological laboratory, who discovers new means of diagnosing, preventing or alleviating disease. But the farmer will be greatly assisted, if, in addition to an intelligent insight into how to conduct such an inquiry, he has at least such knowledge of elementary science as will assist him to acquaint himself with what has already been accomplished, as well as to eliminate useless experiments. What is really needed in this direction is a change in our national mental attitude. In education having this end in view, it is not so much the quantity of knowledge imparted that counts, as the widespread stimulation of scientific curiosity and love of accurate knowledge, with insight into how to proceed to satisfy this desire.

The general kindling of the spirit of scientific inquiry or research is only one aspect of the national problem. The other centers round the importance of extending, in every way within our national means, those researches carried on, either within or outside of our university and government laboratories, in larger private laboratories, on experimental farms, in connection with our soil, our forests, our minerals, or our fisheries, or elsewhere. These researches aim to widen the boundaries of knowledge by a study of natural phenomena, or of the laws expressing their relations, or of the best and most efficient means of controlling nature in the interest of man.

This work is generally highly specialized and sometimes costly, though the cost is usually very small relatively to the value of the result achieved. Its national success is conditioned on two factors: adequate financial support; and efficient means of selecting and training those gifted with special ability for conducting such investigations. The latter is clearly conditioned on a national scheme of scientific education as already discussed, if it is to reach the highest success. The aim of the present Conference is doubtless to emphasize the national importance of scientific research. Of even more fundamental importance is it that there should gradually be created, through education in the broadest sense, a wider interest in scientific inquiry, as the most solid and sure foundation of national material prosperity and well-being that can be laid.

Let the Pulp & Paper Industry take heed. — Ed.

BEAUHARNOIS MEN STRIKE

Employes in the Howard Smith Paper Mills at Beauharnois are on strike following the refusal of the company to grant an increase in wages of about 25 per cent. All the men, numbering about sixty, have ceased work. The strike opened last Wednesday.

The management very promptly denied a report that the company would not meet the men to negotiate the matter. The company is ready to meet their employes at all times, it was said. It was intimated, however, that the increase requested by the men was not regarded as justifiable.

Pending a settlement of this matter, the opportunity is taken to overhaul the mill and make repairs.

HARDENING CONCRETE

Experiments by the United States Bureau of Standards to develop a method of accelerating the hardening of concrete, especially when it is to be used in wet or damp situations, have shown that 4 per cent of calcium chloride added to the mixing water increases the strength of concrete at the age of one day 100 per cent or more. In some cases in two days the strength equalled 75 per cent or more of that normally attained in one month.

INSTITUTE ITEMS

COMPLIMENTS FROM NOVA SCOTIA

Dr. F. H. Sexton, Director of Technical Education for the Province of Nova Scotia, writes as follows with regard to the correspondence courses given by The Institute of Industrial and Domestic Arts:

"I looked over your Syllabus in Pulp and Paper Making and think that this course based on your excellent text, should serve a large clientele in this branch of industry with great profit to the students.

"Your efforts deserve to meet with great success and I sincerely hope that this will be the case to even a greater extent, although the number of students already enrolled seems to me to be satisfactory for the short time the instruction has been offered."

Similiar opinions have been received from other sources, and further information, with regard to this important opportunity, will be gladly furnished by addressing the Institute at Gardenvale, Quebec.

SELF-EDUCATION

It is my personal belief that the best education that a boy or girl can get is one obtained by individual industry or personal effort.

Education is experience, and from experience we get knowledge.

Teaching the student an alien tongue loans more chance to talk. To learn how to paint the lily is the golden wash of art. To get a head full of geometry is good, but to cause a hill of potatoes to produce more means much more for the family.

This practical age. The dead languages and the ancient formulas are for the highbrows, but the boy who can solve the problem of more Production and better Service is the one who will get the high salary and enjoy the big income.

Tens of thousands of young men deplore the fact that they cannot attend College; but remember this, my young friend, the University of Top-Notch Earning is not a Trust. The College is not the Alps of Achievement.

Let the favored financial few feast upon the fruit of so-called finished education while you continue to get your experience out of the industry that pays you, and during these long evenings supplement your daily experience with the discipline of study.

The lasting satisfaction in Life is to be useful to the greatest number and not merely ornamental.

America needs its professors who will solve the unknown trails over the Milky Way and locate the causes and list the effects; but you just go along with your plan of self-education, and some day they will put you in a class where we find the men who have actually made America.

Lincoln, by the light of a candle and not by the learning of a College, improved himself, and then improved his Opportunity. — The Silent Partner.

MORE ABOUT MILL AT NELSON, B.C.

Last week we published an item to the effect that T. G. Howland and J. C. Jacobson, of Minneapolis, visited Nelson, B.C., to investigate possibilities of a pulp and paper mill at Nelson. The "Vancouver Sun" prints the following further information under date of March 29:

Establishment of a $2,000,000 pulp and paper plant in Nelson is aimed at in negotiations which have been quietly conducted for some time past and which have now reached the stage where an option has been taken on a large site in this city and on a water site owned by the Kootenay Pulp and Paper company, an organization formed three years ago which, however, failed to establish a plant.

The prime movers in the deal are Howland & Waltz, pulp and paper manufacturers of Minneapolis, who already own large timber limits in the Kaslo district, but this firm is only acting for large financial interests in the United States, and while there is at present every indication that the industry will become a reality in Nelson, the matter cannot be regarded as settled until these interests have received, considered and checked up the reports which are being submitted as the result of the present negotiations.

A chief point in the negotiations has been the matter of power. The city at first offered to sell the company power at $18 a horsepower from the civic plant, which would have to be extended for the purpose. Then there was the likelihood that the company would secure power from the West Kootenay Power company, a likelihood that suited the city in that it considered that if the plant came, all the civic power would be needed for street railway extensions, additional street lighting, etc. This seemed likely to be the solution in view of the fact that the West Kootenay company recently secured additional water power rights and planned operations to increase its water power.

In the meantime, however, Howland & Waltz secured an option on water rights held by the old Kootenay Pulp & Paper company, at Granite Falls, four miles from Nelson and eight miles from Bonnington Falls, by securing options on 90 per cent. of its shares. To ensure that the company would be in a position to develop all the power it would need from this site T. G. Howland, accompanied by Kenneth Campbell, M.L.A., recently visited Victoria and consulted with the government. Satisfactory results are reported.

The company holds an option on what is known as the McGoldrick site, 30 acres in Nelson on the shore of the Kootenay river.

It is expected that at first about 150 workmen would be employed. The negotiations are being conducted on behalf of the city by Mayor L. H. Choquette. While Nelson citizens have laid due consideration on the fact that all negotiations are only preliminary, prospects of a big plant create much optimism. T. G. Howland and his engineer, J. C. Jacobson of Minneapolis, have left Nelson to place reports before financial interests.

GOLD BRINGS DANGER

The opening up of the new gold field in Quebec brings a great danger to the forest. This is in a heavily wooded region, southwest of Amos. The real prospectors will doubtless be careful, but the trailers and "tenderfoot" would-be's will need very careful watching, best done by areoplane.

HANNA COMPANY WINS IN LEGAL ACTION

In the suit brought by the Sun Printing and Publishing Association of New York to recover $1,510,000 from the Remington Paper and Power Co., now the Hanna Paper Corporation, the Court of Appeals at Albany Tuesday handed down a decision favoring the paper company.

The case has been long fought in the courts of the state. It was brought by the New York newspaper corporation against the local paper mill company for damages for alleged breach of contract for the purchase by the Sun Association of 16,000 tons of newsprint paper in 1919.

After 4,000 tons had been delivered the paper mill company cancelled the contract on the ground that it was invalid because the price had not been definitely fixed. The late Senator Elon R. Brown had represented the local paper mill company. After his death former Governor Nathan L. Miller was substituted in place of Senator Brown.

EXPORT OF PULPWOOD

Halifax, N.S., April 6.—Opposition members in the House of Assembly tonight, led by H. W. Corning, Yarmouth, and Dr. J. A. MacDonald, Richmond, both Conservatives, pressed strongly for the revoking of the order-in-council by which the Oxford Paper Company, of Rumford Falls, Maine, are allowed to export pulp wood without first manufacturing it from their six hundred thousand acre lease of Crown lands in Northern Inverness and Victoria counties, Cape Breton.

The lease was originally made in 1899 for a term of thirty years, with the stipulation that the pulp should be manufactured in Nova Scotia. The lease was changed in 1901 to one for ninety-nine years and an order-in-council was passed to allow the exportation of the wood without manufacture.

MARKING OF MILL WRAPPERS

United States Customs collectors have been advised to assess an additional duty of 10 per cent ad valorem, (under Sec. 304, Tariff Act of 1922), on all paper imported from Canada **not properly marked, branded or stamped,** on and after April 15th, 1923.

A letter from the Treasury Department to customs collectors in respect to proper markings of "mill wrappers" says:

"The matter of proper marking required on so-called 'mill wrappers', a low grade of paper imported in rolls, has recently been submitted to the Department by this office.

"It appears that the practice at New York is to require in respect to such merchandise that both the rolls and outside wrappers should be marked with the country of origin, and the Department is of the opinion that this practice is in conformity with the law, and directs that we conform our practice to that prevailing in New York.

"The Department further states that inasmuch as this direction involves a change in the practice heretofore existing in this district, shipments entered by importers or shipments in transit prior to receipt of notice of such change be released in accordance with your previous practice and without the imposition of additional duty. Importers should be promptly notified of the change in practice."

A NEW METHOD OF MEASURING THE FLOW WATER*

By NORMAN R. GIBSON **

About the end of the first century, Hero of Alexandria first described the volumetric, or bulk, method of measuring the flow of water. He pointed out that it was not necessary to measure the area of the orifice through which the water was flowing but that a pit might be dug and the water allowed to flow into it for an hour by the sun dial, and the volume of the pit filled in that time determined. This method, refined by the use of instruments of precision, remains today the standard.

During the past three years, an entirely new method has been invented by the author, using three fundamental principles developed within the last 250 years; that force is equal to the product of the mass and acceleration of bodies; that the momentary change of pressure in an enclosed column of water is equal to a "constant" multiplied by the momentary change in velocity, when due allowance is made for the compressibility of water and the elasticity of pipe walls, and when the speed of propagation of pressure waves in water is taken into consideration; and that spouting velocity of water is equal to the square-root of the head or fall under which the water is discharged, multiplied by the square-root of twice the gravitational unit.

Velocity heads and friction losses are proportional to the square of the velocity.

Two essential conditions for the new method are: First, the water must flow through a pressure pipe or other closed conduit, and, second, means must be available for controlling the flow, such as a valve or the gates of a turbine at the end of the conduit. In a typical hydro-electric power plant these conditions are fulfilled when water flows out of a forebay into a penstock at the lower end of which is a turbine and generator equipped with hydraulic governor to operate the turbine gates. The new method is particularly applicable to measurement of water for testing efficiencies of hydraulic turbines in hydro-electric power plants.

The principal operation is to obtain a record of the changes of pressure that occur in the conduit when the water therein is brought to rest. Steady conditions of load on the turbine are maintained for several minutes until the flow has become as uniform as possible. When the usual observations of head, power, etc., have been made, the turbine gates are gradually and gently closed so as to shut off the supply of water to the turbine. Immediately preceding and during the closure of the gates and for a short time afterward, there is obtained a record of time intervals and of the changes of pressure that occur in the conduit. This record is obtained by means of the Gibson Apparatus which is connected through the wall of the conduit by a 1-4-inch piezometer opening at any convenient point upstream from the turbine casing. After the closure, when the disturbance in the penstock has subsided, the same apparatus is used to record the static pressure then existing in the conduit. The complete record is called the pressure-time diagram and when properly interpreted is a precise measure of the mean velocity of the water in the conduit at the moment the gates began to close.

In addition to usual equipment for efficiency tests there is required the apparatus for obtaining pressure-time diagrams. It combines mercury U-tube gage, pendulum, camera box, photographic lens and motor-driven revolving drum enclosed in a light-proof cylinder. The U-tube is made with a short leg of glass tubing and a riser of steel tubing, the ratio of the areas of the two legs being such as to limit within the length of the glass tube the displacement of the mercury under changes of pressure. Calibration of this ratio is readily made.

The making of a pressure-time diagram is simple, each diagram being made on a photographic film 11-inches wide by 18-inches long, from which blue-prints are obtained. On the blue-prints lines are delineated, first to determine the end of the diagram, which is readily accomplished by reference to the uniform periodicity of the pressure oscillations which occur after closure of the gates, and, second, to eliminate from the diagram that portion of its area which has been created simply by the recovery of the combined friction and velocity heads of the water flowing in the conduit. The remainder of the area is then used as a measure of the mean velocity in the conduit. In this method only the flow actually shut off is measured. Usually the turbine gates are not perfectly tight. This leakage is readily determined and added to the discharge calculated from the diagram.

Measurements at the hydraulic laboratory of Cornell University, in 1920, showed the mean variation from volumetric measurement was less than 0.2 of one per cent, and the maximum variation of any one measurement was 1.6 per cent. Advantages, in addition to accuracy, are brief interruption in operation of power plant, and low cost.

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*Research Narrative No. 53, Engineering Foundation.

**Hydraulic Engineer, Niagara Falls, N. Y.

BEMIS MANUFACTURING ASSOCIATES

In 1910 the late Harry O. Toue organized the Bemis Manufacturing Associates at Watertown, Mass., for the sole purpose of supplying paper mills with gutta percha splicing tissue. Mr. Toue was in close touch with the larger mills and diligently worked and experimented until he produced a tissue which met with universal satisfaction. For at least the last ten years, this concern is said to be the largest supplier of this tissue in the United States and Canda. The various uses to which the material may be put have increased the business of the Company and it is furnishing similar goods to many other trades. Since the death of Mr. Toue in 1921, the Company has progessed rapidly under the very effective management of Arthur F. Townsend and Robert M. Bowen.

RATES ON NEWSPRINT SUSPENDED

Proposed increases in rates of newsrint paper from points in Canada and New England to Nashville, Tenn., amounting to ten cents per one hundred pounds were held unjustified by the Interstate Commerce Commission. New England railroads had joined the Canadian lines in proposing the higher schedules which were suspended by the commission to await investigation.

The invincible Paper & Pulp Corporation of 135 Broadway has removed its offices to the Canadian Pacific Building, 342 Madison Avenue. The new telephone numbers are Murray Hill 1347-8-9.

Technical Section

REVIEW OF RECENT LITERATURE

K — Paper Making Processes and Equipment

K-10 Rosin Sizing. Rudolf Sieber. **Zellstoff u. Papier,** 1, 15-19, 65-69, 139-142, 184-188 (1921); 2, 99-103, 134-139 (1922). **Paper r. Jr.,** 75 No. 15, 49-53 (Oct. 12, 1922); No. 16, 43-46 (Oct. 19, 1922); No. 17, 59-61 (Oct. 26, 1922); No. 20, 50-53 (Nov. 16, 1922). **P.P.M.C.,** 19, 1309 (1921); 20, 912 (Oct. 19, 1922); 1031 (Nov. 23, 1922).-A.P.-C.

K-10 Function of Sulphate of Alumina in the Sizing of Paper. F. M. Bouvier. **Mon. Papeterie Française,** 33, No. 4, 99-100 (Feb. 15, 1922). **Paper Tr. Jr.,** 75, No. 16, 51-52 (Oct. 19, 1922). **P.P.M.C.,** 20, 840 (Sept.. 28, 1922); **Paper Tr. Jr.,** 75, No. 16, 54 (Oct. 19, 1922).-A.P.-C.

K-10 Composition of the Rosin Size Emulsion. N. D. Ivanoff. **Bumazhnaia Promyshlenost,** 1, No.1, 33-38 (July & Aug. 1922); **Paper Tr. Jr.,** 76, No. 11, 45-46 (Mar. 5, 1922). The composition of a sodium resinate solution is not figured from the amounts of rosin and alkali used, on account of hydrolysis. The extent of hydrolysis. The extent of hydrolysis was determined, 1) by freezing, and 2) by ultra-filtration. Three different concentrations of rosin size analyzing 39.6 per cent free rosin were frozen in the open air. The precipitates formed were filtered, washed, dried and weighed. The filtrates were treated with HCl: The results proved that hydrolysis of sodium resinate increases with decreasing concentration. The constants of hydrolysis were calculated from the results and found to be 0.662, 0.847, and 0.922 for concentration of 15.4, 5.0 and 0.5 grams rosin per liter, respectively. Using Sigumd's ultra-filtration method the constant of hydrolysis for an 0.05 per cent sodium resinate solution is found to be 0.928, which figure agrees with that obtained by freezing out. At the dilution of the beater we probably have a solution of colloidal rosin in an alkaline medium.-M.C.

K-10 Effect of Sunlight upon the Vegetable Paper Sizes. L. P. Zhereboff. **Bumazhnaia Promyshlenost,** 1, No. 1, 25-32 (July & Aug. 1922); **Paper Tr. Jr.,** 76, No. 11, 50-52 (Mar. 15, 1922). In his previous work ("The Theory and Practice of Paper Sizing") the author pointed out that sizing consists in changing the little canals in the paper from capillary to anticapillary, caused by sodium-resinate which forms a very thin layer of rosin on the fiber. Four strips of writing paper were exposed to the sun. These were: all rag, rag and chemical pulp, all chemical pulp and, finally, chemical and mechanical pulp. These papers were covered with a series of glass plates of different colors: white, blue, green, yellow, red, and violet; the extreme right was protected from light by a piece of white rag board. After exposure tests for sizing were made in the usual manner by drawing lines ¾ millimeter thick using alizarine ink. The results were as follows: 1) All papers, irrespective of composition, lose their sizing through exposure. 2.) The action of light is strong and shows its effects in a short time (10 days), the composition of the paper being of no consequence. In 1½ to 2 months all papers become slack-sized, and after ½ year, as if entirely unsized. 3) The rays destroying sizing are violet, blue and yellow, the last less than the first. The green and red show little action. This proves that the causes of destructions of sizing lie not in the composition of the paper, nor in the combination between rosin and the fibers, but in the rosin itself. 4) The rapidity of destruction shows that the rosin in the paper is in a highly accessible condition to the rays of light, which can only occur if the rosin forms a thin, molecular layer on the fibers making the pores of the paper anticapillary. Arranging the solar spectrum in a circle, we see that the equally acting rays are diametrically opposite, being complementary. It is known that rosin will transmit red and green rays, but will completely absorb blue and violet. This agrees with the photo-chemical law, that only those rays which are absorbed by a body can exert chemical action upon it. The suggestion is made that libraries, etc., containing rare documents, exclude the destructive rays by filtration of light.-M.C.

K-10 The Colloid Chemistry of Paper Sizing. **Dr.** Rudolf Lorenz. **Papierfabr.,** 21, 54-56 (Jan. 28, 1923). Published previously in **Wochbl. Papierfabr., 53, 4542** (1922). **Pulp and Paper Mag.,** 21, 191-192 (Feb. 15, 1923).-J.L.P.

R — General

R-12 Power Plant Cost Accounting Adaptable to Different Classes of Paper and Pulp Mills. Paper Trade J., 75, No. 22, 51-53 (Nov. 30, 1922). An outline of steam and power plant cost accounting based on forms prepared by V. D. Simons and the Republic Flow Meters Co.-A.P.-C.

R-12 A Standard Basis for Comparative Cost Estimates. James A. Reilley, **Paper Trade J., 75,** No. 20, 20-28 (Nov. 16. 1922); **Paper Mill, 45, No. 45,** 32, 34, 38, 40 (Nov. 18, 1922). The author shows the great benefits which would be derived from the adoption of a standard basis for estimating costs in the paper industry, and presents and explains in detail an estimate similar to that used at the American Writing Paper Company which is proposed as a basis for working out a standard estimate for writing and cover papers.-A.P.-C.

R-12 Cost and the Paper Industry. T. J. Burke. **Paper Trade J.,** 75, No. 20, 32-38 (Nov. 16, 1922); **Paper Mill,** 45, No. 46, 26, 28, 30 (Nov. 25, 1922); **Paper Ind.,** 4, 1248-1250 (Dec. 1922). A discussion of the benefits of the Cost Association to industry, to the different groups in the industry, and to individual cost men in the industry, together with an enumeration of the advantages to be derived from uniform cost accounting.-A.P.-C.

R-12 The Relation of Costs and Industrial Engineering in Paper Manufacture. Sanford E. Thompson, **Paper Trade J.,** 75, No. 24, 49-52 (Dec. 14, 1922). The author explains and discusses the complementary nature of cost accounting and industrial engineering, showing that the former merely tells when costs are high or low, while the latter shows why this is so and indicates the cure for defects and standardizes conditions of production. This is illustrated by well chosen examples such as estimating the costs of a new order, finding the most profitable lines, raising a department to a paying basis, etc.-A.P.-C.

THE WOODLANDS SECTION

N. B. FOREST ENTRY LICENSE

The Royal Gazette contains a Proclamation issued by the Minister of Lands & Mines under authority of the Forest Fires Act 1922, in which all forest land in the Province of New Brunswick is proclaimed "a protected area" with the following regulations.

No person may enter upon any forest land after May 1st. 1923 until November 1st, 1923, for the purpose of travelling, camping, fishing, or picnicing or for other purposes, without first having registered with a local fire warden, Councillor, game license vendor, or other person duly authorised, giving his name, dates, and having obtained a registration certificate. Such certificate shall be produced when requested by any fire warden or other authorized person, provided that the following persons or Companies shall not be subject to the above regulations, namely: licensees or owners of forest lands entered upon or to their employees, or to the fire wardens, fire fighters, Land Surveyors or to persons accompanied by registered Guides or to holders of hunting, fishing, guides or mining licenses. All persons shall when requested by any fire warden show their license and give the above mentioned information regarding their stay in the forest.

Penalties for non-conpliance with the above, not less than $10 and not more than $100 or 30 days in jail.

This action is deemed necessary by the Government in a determined effort to prevent a repetition of the immense forest fire damage this year resulting from the carelessness or thoughtlessness of those entering the forest on pleasure bent. This regulation was passed last year, but was not enforced on account of the wet season. It is hoped that the registration certificate will bring to the minds of those who enter the woods a greater realization of the value of the forests and the necessity for always being careful of fire.

The adoption of the registration certificate here is not an attempt by the Government to keep people out of the woods and deprive the fishermen, the camper or the hunter of his annual vacation. It is merely a regulation whereby each individual will be reminded and encouraged to be careful of fire when in the forest.

It is in keeping with the extra precautions being taken by private land-owners this year, several of whom are placing special patrols to see that no people enter at all. In the past the fire hazard was augmented by tops and brush from logging but to-day this has been increased two hundred-fold by the addition of so much dry dead material as a result of the standing timber being killed by the spruce bud worm. Forest fires which once gain headway this year cannot be expected to be controlled. The seriousness of the situation cannot be over-estimated and the owners of forest land as well as the inhabitants of settlements and towns near extensive areas of forest cannot be too careful.

A review of the fire damage in previous years shows that those entering the forest, including the camper, fisherman, picnicer, have caused an average fifty per cent of the total damage, — as much as all other causes combined. In 1921, the year of such heavy fire losses, seventy-five per cent was traced to the carelessness of those entering the woods. It is the only serious cause of forest fires which have not been restricted in the past. The settler cannot burn his slash except under regulations prescribed by law and controlled by the fire warden. Railway companies are not allowed to operate locomotives which through defective appliances may set a forest fire. Mills and other plants operating near forest land must be equipped with proper screens before being allowed to operate. In this way forest losses from these causes have been greatly reduced, the damage from settler's fires being reduced from 75% of the total damage in 1920 to 1.5% in 1921. But the person entering the woods has not been restricted in any way. He has come and gone as he pleased and while the majority have been careful of fire, the camp fires neglected or burning tobacco carelessly thrown away has caused an annual loss to forests amounting to hundreds of thousands of dollars — a loss which is not replaceable for a century.

NORWEGIAN FOREST FIRE INSURANCE

It is nearly 70 years since this question of forest fire insurance was first taken up in Norway, when a company as early as in the year 1856 first offered to write insurance. This first attempt was not very successful nor were later attempts by other companies.

That the problem was not easy to solve is plainly shown in that insurance was not successful in other countries where it was attempted at that time.

Not before 1912 was the thought of a rational form for forest insurance realized by the forming of the Norwegian Mutual Forest Fire Insurance Company.

This was due to the efforts of Anth. B. Nilsen, first director of the company and Reidar Holst, who became director in 1916. The preliminary work was done in 1911 by conferences with the forest owners.

The guaranty capital of 30,000,000 kroners was soon obtained and the company was formed on the 20th of February, 1912. In course of the first year the guaranty capital increased to 45,000,000 kroners divided among 45 members. Since then it has steadily increased until 1921 when it was 300,000,000 kroners.

The number of policies written increased in the first ten years from 1,200 to 8,900.

The system on which the company's activities were based and which was unknown up to this time, has proved very successful and has later been followed in foreign countries. Now there are only a few counties in Norway in which forests are not insured. The company figures that it has, in all, insured two thirds of the insurable area.

The basis premium is figured at 1¼ pro mille with 20% reduction after four years and 0.4 pro mille as bonus after eight years. The total income on premiums was 383,000 kroner in 1921, of this 89,000 kroner was deducted in form of reduction and bonus. Of the year's surplus, one third is set aside as premium reserve. This reserve is now 125,000 kroner. The company has, besides, a reserve of 800,000 kroner, a castastrophe reserve of 90,000 kroner, a bonus regulation reserve of 60,000 kroner and a pension reserve of over 50,000 kroner.

When the company started operation, the forest fire rules were only indifferently observed in many districts. The strict observance of the rules we now have is due to the efforts of the company. In 1914 the company took up the question of a revision of the forest fire laws with the government. This led to a new law being enacted in 1921 which contains clear and uniform rules for the whole country. The company has further contributed to the erection of forest fire lookout stations and the installing of telephone lines. The Forest Fire Insurance Company has been especially active in introducing fire preventive measures. —Translated by Jacob Erichsen, for the News Print Service Bureau Bulletin.

FOREST FIRES CAUSE OF UNEMPLOYMENT

That unemployed workment are walking the streets of Ottawa and Hull today because forest fires set by thoughtless citizens have made the water powers of the Chaudiere mills no longer reliable, was the statement made today by Mr. Robson Black, Manager of the Canadian Forestry Association in an interview.

"A great part of the forest destruction on the numerous watersheds drained by the Ottawa has been unnecessary. The axe has not taken one tree to ten killed by fire. In very few cases of careful logging does the operation seriously affect the storage capacity of the region but when fire comes and the soil is swept bare, the "run off" amounts to a torrent in Springtime and but little water is available at the seasons when the turbines most require it.

"Because timber regions were burned down by campers, settlers, prospectors and others in the upper waters of the Ottawa, some of the chief local industries have been forced to buy partof their pulp from Eastern Quebec at double the price at which they could manufacture the same article, and Ottawa employees are thereby out of a job.

"A pulp and paper mill is just the agent of the Forest. To kill a forest by careless acts with fire is a body blow at the security of water powers and the raw material on which the mill exists and pays wages. Every forest fire must be paid for and we see who actually does pay the price when workmen are turned loose. Prospectors searching for non-existing minerals destroyed twenty years supply of pulpwood for one Ottawa Company. Such acts of legalized vandalism will do more to send skilled workmen to the United States than can be counteracted by any quantity of immigration propaganda."

(Note: See item, Gold Brings Danger, page 434).

Book Reviews

The Timbers of India. By Alexander L. Howard. London: William Rider & Son. Price 2s. 6d.

In this pamphlet, which is illustrated by some excellent photographs, Mr. Alexander L. Howard, the well-known authority on timber, has written a descriptive catalogue of some forty of the most important Indian woods. It is probably quite true, as he remarks, that if the average man, even one accustomed to use timber, was asked what Indian woods there were, he would probably answer "teak," and be at a loss to name another. As a matter of fact, India possesses a great variety of woods, suitable for all manner of purposes, from heavy constructional work to the delicate craft of the cabinet maker. There is little doubt that markets could readily be found for all these if their qualities were once recognized, and if regular supplies could be guaranteed. With regard to East Indian rosewood, for instance, Mr. Howard believes that its uses—at present practically restricted to the piano-forte trade—migh be very greater multiplied, and he adds: "perhaps it might stimulate the efforts of the Indian Forestry officers to produce supplies more speedily if it were generally known that the product of only part of one English-grown tree, when handled and marketed by an expert, realised more than £1,000 sterling."

Probably the chief difficulty that confronts the Indian forest authorities is transport; but that is a difficulty by no means restricted to India. "The experience gained in this country during the four years of war," writes Mr. Howard "has taught us much about transport, and it is fortunate that at least one Indian forest officer has been here and taken part in the organization which it was necessary to establish for the logging, transport, and conversion of timber here; and as a result of the experience which he has already gained, much may be expected on his return to India." — J. Royal Soc. Arts, Sept 26, 1919.

IN THE WOODS

A party of five men from the New York Office of James D. Lacey and Company, has started preliminary work on an intensive forest survey of a large property in Eastern Canada. As soon as the snow is off about 20 additional men will join the party.

Standard topographical type and stand maps will be made on a scale of four inches to the mile, to be used in conjunction with detailed estimates which will give volumes by standard diameter classes for each important watershed subdivision. The value of these maps and reports to operators is becoming more widely appreciated because executives now generally realize that mere statements of wood volumes, however reliable do not answer present day operating requirements.

Other parties are still working in various parts of the South, both in hardwood and pine, but with the coming of the summer season, most of these men will be transferred to work in the north.

Loose clothing around moving machinery is very dangerous it becomes wound up quickly and causes serious accidents.

If you buy what you don't need, you will soon need what you can't buy.

PULP AND PAPER NEWS

The National Wood and Pulp Company, Limited, Montreal has been incorporated with a capital of $100,000. The powers include the construction and operation of pulp mills of every description; the construction of appliances for cutting and transporting logs and carrying on business in pulp and lumber.

The Rolland Paper Company Limited, Montreal took a leading part in the "Courtesy Week" propaganda, and with other companies sent out 5,000 decorated cards, bearing courtesy mottoes, to every Kiwanian in Canada and others.

Mr. I. H. Weldon, of the Provincial Paper Mills, Limited, Toronto, spent a couple of days in Montreal last week.

Vickers Limited, Barrow-in-Furness, England, will build a steamer for the Anglo-Newfoundland Development Company. The vessel is to be 400 feet in length, with a speed of eleven knots, a displacement of 13,000 tons, and a capacity for carrying 5000 tons of paper in rolls. She will be employed in transporting paper manufactured in Newfoundland to London and Manchester.

It is welcome news that co-operative efforts are to be made to prevent forest fires. As a result of a conference between our Mr. G. Piche, Chief forester of the Province of Quebec, and Dr. Prince chief forester of the Province of New Brunswick, the forest rangers of both provinces will work together at border points.

Mr. Frank W. Horner has been elected president of the Montreal branch of the Society of Chemical Industry. At the annual meeting held last week Mr. W. C. Munro forth year chemical engineer student at McGill, spoke on the manufacture of newsprint, his talk being illustrated with lantern slides. Mr. Munro won the $50 prize given by the Montreal branch of the Chemical Society for the best essay.

Mr. W. Leslie, of the Interlake Tissue Mills, Limited, has been on a business trip to Montreal.

W. W. Thomson, of Toronto, owner of the Glengarry Pulp Company, formerly the Cornwall Pulp and Paper Company, reports his plant as running smoothly after a thorough overhauling. The equipment consists of four grinders, with sawing and barking machinery, and from twenty-five to thirty men are employed. The consumption of wood is twenty-five to thirty cords of spruce per day and the production of ground wood is from twenty-five to thirty tons daily. Electric power furnished by the St. Lawrence Power Company and the Hydro. The raw material, which at present is cut in the Parry Sound district comes in by rail and is delivered at the mill yard by the Stormont Electric and Power Co., switches being run in from the street railway tracks. The groundwood is loaded onto the cars on the switch alongside the mill with the least possible amount of hauling. The ground wood made by the company is suitable for the manufacture of book paper and tissue and No 2 bond. The Howard Smith Paper Company is a large consumer but the bulk of the product goes to the United States. The company is owned by W. W. Thomson, of Toronto, with C. J. Shephard, of Toronto as manager and E. E. Emigh as superintendent.

Within a few days the Department of Lands and Forests in Toronto will call for tenders on a block of timber in the vicinity of Alsace, Kapuskasing township, Ont., and vicinity, comprising about 1,000 square miles. The area is to be put up for sale at the request of the Continental Wood Products, Ltd., who will agree to erect a kraft paper mill and plant at Alsace, Ont., which will produce 100 tons of pulp daily. The contemplated agreement will also call for the subsequent erection of a 50 to 75 ton kraft paper mill at Alasce. At this point the company requesting the sale is already operating an extensive saw milling plant and wood-working factory, having about a million dollars invested in plant and equipment in the locality. So far they have operated without limits of their own, buying wood from veterans and other settlers. The company is affiliated with the Continental Paper Bag Co., of the United States. The 1,000 square miles to be offered at public competition is covered mostly with jackpine, there being less than a million cords of spruce on it, according to Government estimates. Jackpine is a satisfactory wood for the manufacture of kraft paper, though not for newsprint. In event of the Continental Wood Products Company succeed in the bidding for the limit, it will mean a new industry of importance for the North Country.

C. L. Massacer, President and General Manager of the Brantford Cordage Company, has announced that the company will proceed at once with the extension of the plant which will increase the capacity from 10,000 tons a year of binder twine, as at present, to 14,000 tons. The new building will be 50 by 200 feet.

O. H. Moore, general manager of the Hinde & Dauch Paper Company of Canada, Ltd., 43 Hanna Avenue, Toronto, has returned after some time spent in New York during which he attended the paper show and convention.

E. Pullan, Limited, rag and paper stocks, Toronto and Hamilton, have just completed one of the most successful business years in their history as will be shown by the financial statement to be presented at the annual meeting to be held in a few days. The firm have been doing considerable advertising this year along lines calculated to educate the public in the saving and sale of waste paper. They have just issued a second edition of a handy little booklet entitled "How to make Waste Collections Pay" which is being widely distributed.

Several changes in the organization of Continental Paper Products, Limited, Ottawa, have been announced. J. H. Wright, who has been with the company for about twelve years, has resigned as general manager and three associate managers have been appointed. They are J. E. Dennie, Toronto: John A. Nixon, Montreal and Herald A. Miller, Ottawa. Mr. Wright was formerly with the Dominion Paper Company, Montreal and Mr. Dennie, who is the Toronto representive of Continental Paper Products, has been with the firm for about ten years.

In connection with several small lots of Scandinavian paper that have been imported into Canada of late it has been pointed out in the Ontario trade that the quotations, when first received, looked very attractive. Some of the importers who are not experts on the question of the importation of foreign goods concluded that the laid-down price in Canada would be at a certain figure, but when the paper arrived it was found by the Customs authorities that the price at which it was invoiced was below the fair market value for home consumption, and in consequence it appears that the dumping clause was put into operation, which considerably increased the laid-down price and caused considerable embarrassment and dissatisfaction to the importer. A small tonnage of this imported paper kraft and although the amounts involved are comparatively small it is deemed wise to warn those importers who might think they are getting goods at a low price to secure full information as to what the home value is.

S. F. Duncan, of the Provincial Paper Mills, Limited, has returned to Toronto after a week spent at Port Arthur where he supervised production at the new book paper mill of the company. He reports the plant as running smoothly with a ready market for the output.

T. J. McCabe, of the Buntin Reid Company, Limited, Toronto, spent part of last week in Philadelphia.

H. A. Goldsbrough, late of the Hodge-Sherriff Paper Company, London, Eng., has joined the sales staff of the Toronto office of the company.

John Hewitt, President of Paper Sales, Limited, King Street, Toronto has gone on a western trip and will go through to the Pacific Coast.

H. B. Donovan, of Canada Paper Co., Ltd., Toronto, spent last week on business in Montreal.

G. D. Valkenburg, of the board department of Price Bros., Quebec, was a caller on Toronto paper trade last week.

The Porcupine Pulp and Lumber Company, Hoyle, Ont., have cut 10,000 cords of pulpwood during the past season which is now being rossed preparatory to shipment to the parent company, the Cliff Paper Company, Niagara Falls, N. Y.

Announcement has been made that E. W. Backus, head of the Fort Frances Pulp and Paper Company, Fort Frances, Ont., has purchased the Rat Portage Lumber Company for a sum in the neighborhood of $3,500,000. The Rat Portage Lumber Company, whose business interests centre in the Kenora district, was at one time regarded as one of the biggest business concerns in Canada. For many years its executive was the late Sir D. C. Cameron, Lieutenant-Governor of Manitoba. It is understood that the transaction does not involve the company's Pacific Coast interests.

According to the statement of I. H. Weldon of the Provincial Paper Mills, Limited, the company showed a larger production during the month of March than ever before in the history of the company. The mills are sold up well into July for book and writing paper, which are the company's chief products. The Port Arthur mill, which was recently developed from a pulp mill into a full fledged paper mill, has started off with an initial production of 30 tons daily and this will be increased as the market warrants. Business on the whole shows a marked improvement over this period last year and the prospects for a successful year for the company appear to be very bright.

An indication that the proposed two million dollar pulp and paper mill for Nelson, B. C. is likely to be a reality is seen in the announcement by Howland & Waltz, the company interested, that it will immediately erect a new mill on part of the site which it has obtained for the paper plant. A gang of men has been put to work cleaning up the site and soundings of the bay have been secured with a view to constructing a boom with a capacity for handling 1,500,000 feet of logs. The new mill, which it is stated by E. F. Howland will be in operation early in May, will cut lumber to be used in the construction of the pulp and paper plant.

NEWSPRINT EXPORTS ESTABLISH NEW HIGH RECORD IN MARCH

A special report issued by the Canadian Pulp and Paper Association states that the exports of Canadian newsprint in March established a new high record when 113,450 tons were sent to other countries. The previous highest figure was 95,196 tons exported in March 1922, so that the total for last month was almost 20 per cent above the former record. Thus for the first time Canadian newsprint exports passed the 100,000 tons mark.

In addition to the new record for exports March also saw a new high record for production of newsprint. Last month the Canadian mills produced a total of 106,361 tons of newsprint, also passing the 100,000 tons line for the first time. The previous highest production figure was reached in January this year, when the production was 99,797 tons. Since last May, when production was over 90,000 tons for the first time, production has been keeping well up around 97,000 and 98,000 tons monthly and the first three months of this year show an increase of 62,408 tons of 25 per cent. over the corresponding three months of 1922.

Of the 113,450 tons exported last month, the greater part 111,015 tons, went to the United States, leaving only 2,435 tons for other countries of which Australia took 1,588 tons and New Zealand and South Africa over 300 tons each.

Newsprint exports for the first quarter of the year have amounted to 280,634 tons compared with 233,626 tons for the first quarter of 1922, so that the present year so far, shows an increase of 47,008 tons or 20 per cent over last year's figures. Of the total exports for the first three months 271,328 tons went to the U.S.A. an increase in the quantity exported to that country of 53,977 tons over the first quarter of 1922. Exports to countries other than the United States show a decline from last year's figures due mainly to the heavy demand from the U.S.A. where the consumption keeps steadily up to high levels and the demand is insistent.

The National Paper Stock Co is now owned and controlled by the Kander Paper Stock Co. Limited and directors of both companies are of the board of the Kander Paper Stock Co. Ltd. namely:

Mr. Lewis Wolfe President
Mr. A. Gordon Vice-President
Mr. M. L. Kander Sec'y Treasurer.

BRITISH TRADE NEWS

(From Our London Correspondent)

London, April 16, 1923

There is still an unsettled feeling prevailing in the British paper industry and business is not what mill owners would like it to be. Newsprint producers are doing well; but other sections want liveliness to enable the manufacturers to say that they are getting busy again. Mill owners are increasing their prices for various papers. These advances are causing complaints to be made by consumers who say that they will discourage trade. White news off cuts jumped to £17, from £12, a ton in two months, which is equal to a rise of 42 p.c.

The Scottish mill dispute still remains unsettled, but efforts are being made to find a way of solving the difficulty of non-trade unionists working alongside the trade unionists. It will require a lot of reshuffling. Other minor disputes have arisen amongst the handlers of paper in the Paper Workers Union. Government departments are affected and Government publications are held up for the past week.

King in a Paper Mill

The royal family, within recent years, has taken a keen interest in the production of paper and the paper mill. Some time ago the Prince of Wales, as a result of what he saw in Canada, visited the Hele Paper mill, in Devonshire, and was greatly interested in the work of the various departments. Within the past week, the King and Queen travelled to Hampshire inspected the Laverstoke Paper Mills and saw the manufacture of bank-note paper and the paper used for pesos for the Chilian Government. The bank-note paper is used in British currency paper money and for the past 200 years paper has been turned out at Laverstoke, which is now run by Portals, Ltd.

Messrs. Portal entertained the King and Queen to luncheon and two elements in the visit they enjoyed very much were the water-marking and the feeding of trout, by the Queen, in the mill river which runs underneath a bay window.

Empire Trade

My recent comments on Empire Trade and the necessity of Canada clearing up matters with the Australians on the preference question, remind me that the conference of the Colonial and Dominion delegates will be held in October, in London. Viscount Ednam has pointed out to the Government that the interests of the Empire are being gravely threatened by the economic development of other countries. The U.S.A. he said, was making a determined and so far an extremely successful attempt to capture the Canadian trade. Of $652,000,000 of new capital sent abroad by the States in 1922, $156,000,000 went to Canada and Newfoundland. In the same year the British share of the Canadian import trade was only 16 p.c., as compared with America's 72 p.c. In the same way American capital was going into Australia and South Africa. Since the war the tariff walls had grown higher and more numerous and he advocated a better understanding between the various Trade Commissioners and the Imperial Government.

The President of the Board of Trade pointed out that there was a serious deficit in the British export trade. With a closer study of Dominion markets, Britain could greatly increase her trade and the good work of the Trade Commissioners be developed. This year a new office would be opened in Vancouver and two new Commissioners appointed.

This Imperial conference is an important one for Canada and, as I said some weeks ago, Dominion grievances must be ventilated strongly, firmly, and at the right time, and adjusted.

Uncomplimentary

The paper workers met at a trade union congress the other day and they discussed the question of hours. In view of the hopes expressed some time ago by the paper mill owners that workers would improve things if they could work longer, the general feeling was that long hours and long shifts were a thing of the past.

One prominent trade unionist said that the conditions some of the workers had to put up with in some of the British mills, when fulfilling their daily tasks, were deplorable and he would not take a small fortune if he had to go through what some of the paper mill hands had to do.

China Clay

Discoveries of deposits of china clay in some of the most unexpected parts of Cornwall have recently been made and arrangements are being made for developing the discoveries.

The china clay trade has expanded very considerably within recent years. Each year brings a new discovery, or, some improvement, to benefit the papermakers.

Mills Closed Down

The secretary of the Amalgamated Society of Papermakers reports that certain mills have closed down indefinitely and that there are some mills which are unable to run more than 50 p.c. of their time. The fine writings and wrapping sections are still suffering from lack of orders. No doubt the increased importation of foreign made paper is making itself felt in the latter case. In view of this, he adds, it is to be hoped that the legislation for the distinct marking of the country of origin upon all imported paper may become an accomplished fact. He advocates the trade label as a distinct mark to enable consumers to distinguish between the foreign paper and the home product.

FINLAND HAD RECORD PULP EXPORTS LAST YEAR

A review of the Finnish paper market for last year received by the Bureau of Foreign and Domestic Commerce indicates that exports by that country reached a high level during 1922. Export industries in Finland not only have set peak records for the post war period but in some instances have even surpassed the best figures attained in peace times, contrary to the case of most other European countries. Chemical pulp exports were particularly outstanding, nearly two and one-half times as much having been exported in 1922 as in 1913. The review points out that this was due to the rapid strides taken by the industry during and since the war and to enlargements and new machinery.

Exports of paper for the year exceeded those of 1913 by 64,000. Only a normal year was recorded for mechanical pulp, while cardboard showed improvement over the very weak year of 1921 but did not recover the high position which that product occupied prior to the war.

UNITED STATES NOTES

The amount of the wage advance made to employees of the International Paper Company, effective April 15, was approximately 8 per cent. About 7,500 of the International's working forces will receive the increase.

Figures on production contained in the annual report of the International Paper Company for 1922 show a total output of 433,809 tons of paper which called for the use of approximately 570,000 cords of pulpwood, 350,000 tons of coal, 700,000 barrels of fuel oil and 23,000 tons of sulphur.

Although the International's 1922 report showed another large deficit, President Dodge stated that dividends on the preferred stock would be maintained.

Work has practically been completed on the new hydro-electric plant of the International on the Hudson River at Sherman Island; and in May or June there will be delivered to the switchboard of the company not less than 20,000 horsepower.

The Robert Gair Company, one of the largest manufacturers of cartons and containers in the United States, reports that net profits for 1922; before deduction for depreciation, were $788,991. There was set up for depreciation $269,498, so that there was a balance earned for interest and dividends of $519,492. Current assets are $4,630,430, including inventories of $2,032,536. Current liabilities amount to $1,283,511. There has been a gain in earning power so far during 1923. The net profits, after depreciation and taxes in the March quarter, were $336,000.

Exports of paper mill products from the United States in 1922, according to complete figures issued by the Department of Commerce, reached a total of $24,152,567, a decline in value of $4,877,106 as compared with the 1921 total of 129,029,673. However, the Commerce Department's experts regard the showing made during the year as a favorable one in view of some of the difficulties met by exporters during recent months. "Taking into consideration the fact that during 1922 competition from European mills was keener than it ever has been," says the report, "and also that exchange rates in most markets were against the United States and in favour of European competitors, the results for the year are decidedly satisfactory and show a very favorable trend in the paper export business. Our exports of paper are not comensurate with our production, which in 1922 amounted to approximately 7,000,000 tons of all grades. Our exports for the same period amounted to approximately 2 per cent of the production. In order to safeguard the industry and to insure full-time operation, the ratio should be much higher, for, with the great increase in productive capacity brought about by the war and the new equipment now being installed and being contemplated, it is doubtful whether the demand in the domestic market will be sufficient to absorb our production on a full-time basis. It is therefore vitally important that the American producers take steps to further develop export markets."

The American Tree Association reports that tree planters, during the first half of April, have broken all records. The last half of the month promises even greater activity in "celebrating the centennial of Arbor Day in 1972, fifty years before it happens." All the tree planters in the country are being registered with the association, and their names will be on a national honor roll to be read when the centennial of Arbor Day arrives in 1972.

A news bulletin of the New York State College of Forestry, Syracuse University, suggests that as a conservation measure the public generally might perform a real service if it could emulate the Indians of the Klamath Reservation, Oregon, who are looking forward with eager anticipation to the visitation of the Colorado Pandora moths which are a delicacy in their diet. The caterpillars which will hatch this summer from the eggs will be very destructive to the foliage of the pine trees and in the natural life cycle of the moth will become nice tender pupae in 1924. The Indians are already looking forward to the feast and general pow-wow. If the Indians eat pupae, the pupae can not hatch moths. No moths means no caterpillars and with no caterpillars there will be no damage to trees. As a conservation measure nothing could be more desirable than to have insect food come into fashion, says the State College insect food come into fashion, says the State College bulletin. $100,000,000 damage is done to forests and $700,000,000 to agricultural interests annually by insects.

Several Wisconsin paper manufacturers may join other industrial concerns in a move to quit the State unless measures are adopted immediately by the Legislature to annul the Severson bill, recently signed by Gov. Blaine which would open to the public all returns of corporations and individuals as recorded in the State income tax. The bill was the result of an investigation by Gov. Blaine in 1922 in which it was disclosed that prominent manufacturers and individuals had taken advantage of the secrecy clause to the extent of failing to report all profits and holdings. Earlier in the year the Dahl bill calling for higher income taxes on corporations caused a furor in manufacturing circles. The radical nature of the tax bills of the La Follette progressives and the Socialists has caused Wisconsin corporations to look with apprehension for the future welfare of their respective concerns.

The Ohio Boxboard Company, having completed additions to its Rittman plant, dedicated the building last Friday night with a "housewarming" and oldtime dance.

A warning has been sent out by the New York Conservation Commission of peril threatening the standing timber of the State in the shape of attacks by the gypsey moth and pine blister rust. The forestry officials urge that protective steps be taken before either can spread. By quickly controlling the pests, through resort to some simple measures, much irreparable damage can be avoided, says the commission.

Millowners are forcing down the price of waste paper and prices will drop considerably lower before conditions show an improvement, in the opinion of Charles Passannanti, president of the Wilson Paper Stock Company, New York City. It is the advice of Mr. Passannanti to owners of waste paper to sell now before prices reach a lower level. Last year the Wilson Company bought from New York firms more than twenty thousand tons of waste paper, and this year the officials anticipate that the concern will break its own records.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, April 24. — While as a whole the local paper trade is fairly good, there are undoubtedly one or two week spots. For instance, the printing industry is not what might be called brisk; the winter season proved disappointing as to the volume of work, but the worst feature was and is the intense competition, carried to a point where many jobs were done at a loss. This condition is reflected in the difficulty of collection so far as the paper trade is concerned. The jobbers are finding it hard to get in the money. Other branches which are not so bound up with the printing trade are a little better situated.

Canadian and American paper companies will have to meet increased wages bills. The International Paper Company, which is outside the union, has set an example in the matter of higher wages, and other companies were last week engaged in negotiations with the unions in New York. The companies represented at the conference included the Spanish River, Abitibi, Fort Frances, St. Regis, St. Maurice, Union Bag, Minnesota and Hannah. The mills offered a compromise of an increase of 4 cents an hour, and the reply of the Unions to this is expected this week. If the terms are accepted, they will no doubt set the standard for other mills, and to that extent will affect practically the entire industry. To what degree the increased wages will affect the price of paper generally remains to be seen, although there is doubt that bonds, book, and writings are due for an advance. Orders are coming quite freely.

In the pulp section, groundwood has again dropped, due to the larger amount now being made in consequence of better water conditions. Bleached sulphite continues to be well bought, while sulphite is firm. It is of interest to note that Canada is likely to be called on more freely for pulp for Europe as well as for the States. According to a despatch from St. John, N.B., a representative of the "Petit Journal", of Paris, is investigating the possibilities of establishing a pulp mill in the province, and exporting the production to France to be converted into paper. This would replace Scandinavian pulp.

The demand for newsprint is as good as ever, in fact there have been inquiries for amounts of tonnage which cannot be filled. The time is approaching when the question of the price for the last half of the year will be taken up. In view of the rising costs, it would not be surprising were the price advanced to $80 per ton. Some mills are in favor of this rise, but it remains to be seen whether the Canadian companies as a whole are willing to incur what some regard as the risk of curtailing consumption by putting the quotation up another $5 per ton

The roofing felt plants throughout Canada are working at capacity. The orders are very large for domestic requirements, and many inquiries have been received on American account. Rags are very firm, with more supplies coming on to the market owing to spring collections, while consignments from Europe will soon be available. The board situation remains unchanged.

Toronto Market News

Prospects in the paper arena have considerably brightened under the stimulus of real spring weather although the jobbers say that business has not yet resumed it customary stride following several weeks of slow going. There are signs, however, that conditions are about to improve. There have been considerably more enquiries for stock during the past week and a slightly increased volume of sales, although there are still complaints from the wholesalers that the recorded sales are small. No one as yet is putting in any stocks of paper of size and buying generally is cautious. Conditions in the Ontario mills are satisfactory and production is keeping up well. In practically every line of paper the output is being absorbed and in only very few instances are the rather dull conditions in the jobbing end of the trade reflected at the mills. Book paper mills are particularly busy and orders are booked ahead several weeks. Bonds and ledgers are a little light in demand and so are light weight papers, such as tissues and toilets, while there is also some complaint from the wrapping paper trade. Envelope manufacturers are running full time and report a good demand for their product, while the manufacturing stationers and paper converters generally are using sizeable tonnages from the mills. Probably newsprint shows the biggest demand of any papr line. The printing trade is using considerable quantities for job work at 7c in ton lots; 7¼c in quarter ton lots and 7½c in less than quarter ton lots, these prices being subject to the long price list discount. Roll news is still quoted at 3¾c in car lots and 4c in less than car lots and prices are holding firm.

PULP. — There is comparatively little strength in pulp prices, especially in respect to ground wood which continues to ease off. Consumers apparently are watching matters closely and are operating as buyers on a reserved scale at the moment. Consumption of ground wood, however, is fair, with production below normal, and mill stocks rather light. The price of ground wood still stands at $35.00 but a lower price seems to be in prospect. Bleached sulphite is fairly firm at $85 to $90, for regular stock with unbleached at $75 and news grade at from $60 to $65, although in the latter case purchases can be made at a slightly lower figure. There is a fairly strong demand for both bleached and unbleached pulp by the paper mills.

KRAFT. — Prices for kraft remain firm with an upward tendency although it is doubtful if there will be any increase in quotations for some time to come. The policy of the Canadian mills is to stabilize the trade and the feeling among manufacturers is that it is easier to do this by keeping prices firm rather than moving them up and down. In the United States last week there was an increase of one quarter cent a pound in kraft, but up to the present the Canadian price has not been affected. The demand for the product is well sustained.

RAG AND PAPER STOCKS. — In waste paper stocks there is a good demand, according to dealers, despite a falling market. So far local prices are con siderably higher than New York prices, but quotations are falling gradually—not through any lack of demand —but in sympathy with the situation across the line. The rag market is holding a good deal better than the paper market. Roofing mills are busy and are absorbing sizeable tonnages of stock, while there is an excellent demand for cotton rags from board mills. The demand all round for rags is good and although there have been no recent changes in prices the tendency is said to be upward. Board, book and roofing mills generally are busy and Toronto dealers say they are all using good tonnages of rags. The following quotations prevail: Paper stock, — f.o.b. Toronto, No. 1 hard white shavings, $4.30 per 100 lbs.; No. 1 soft white shavings, $3.40; heavy books and magazines, $2.30 ledgers and writings, $2.50; No. 1 kraft, $2.50; newspapers, $1.40; No. 1 miscellaneous, $1.15; No. 2 miscellaneous, 80c; New cotton cuttings, No. 1 white shirt cuttings, $13.00; fancy shirt cuttings, $6.75; canton flannels, bleached, $10.00; white lawns, $9.00; blue overall cuttings, $6.75; rope, No. 11 manilla rope, $6.75, mixed strings, $1.25.

NEW YORK MARKETS

New York April 21 — (Special Correspondence) — Paper mills in the States continue to operate at close to maximum capacity notwithstanding that current demand for many kinds of paper has sagged to some extent. Buyers have not been quite so keen for supplies this week as they were recently, but the development of this market condition was rather to be expected as a result of the brisk purchasing of paper by consumers for sometime past, and the effect on the manufacturing branch of the industry has been next to negligible since mills have enough orders on file to keep them busily engaged for weeks to come.

As a matter of fact, demand for paper has lost but little of its volume. Consumers are ordering in about the same proportion as recently though there is a quieter tone to the market as business has settled down to a more conservative state, most consumers having placed contracts which keep their major requirements covered and therefore being enabled to remain out of the open market as buyers excepting in an occasional way. The movement of paper from mills into consuming channels apparently is of record-breaking tonnage. Newsprint, book, wrapping, fine and other kinds of paper are being produced in capacity volume by manufacturers and as fast as supplies are ready for shipment they are sent forward to consuming centres.

A development of importance this week was the meeting of newsprint manufacturers of the United States and Canada and representatives of the mill workers' unions on Thursday in New York to discuss the matter of wages and the offer of the manufacturers to increase wages 4 cents an hour or approximately 10 per cent. Both the skilled and unskilled operatives in the newsprint plants asked advances of a little more than 10 per cent, and the proposal of the mill owners will be put before the workers for a vote and if it is accepted the new contract providing for increased pay will go into effect May 1. The International Paper Company already has announced a wage advance, and if the plan of the other manufacturers is accepted, it will mean that wages of all the workers in practically every newsprint mill of consequence in the United States and across the border will receive the raise. What effect this will likely have on print paper prices is questionable at present, but there are many in the trade who believe this is another argument in support of an advance in newsprint by the beginning of the third quarter of 1923.

Consumption of print paper continues large. Publishers are taking all the supply they are entitled to on contracts and are eating into their reserve stocks and are frequently coming into the spot market in search of additional amounts of paper. Newspapers in New York, and, for that matter, throughout the country, are printing big issues, doubtless bigger than ever before over such a length of time as in the past few months. Forty-four page issues are common for the New York morning dailies, and the afternoon issues run up to 50 pages and even larger in some cases.

Demand for book paper has settled down to a steady call for supplies which is keeping manufacturers actively engaged. Book mills are reported on good authority to be running full, and what is more they are shipping out their product as rapidly as it becomes available. Prices of book paper are firm to strong. Manufacturers are noticeably exerting caution with respect to any price advances, and are generally opposed to higher quotations unless absolutely required by production costs, and, knowing that this attitude exists among manufacturers, consumers of book paper admittedly are confident over prices and are not hesitating to anticipate their wants and place orders accordingly.

Fine papers are enjoying a steady demand of fairly broad dimensions. Taken as a whole, mills making ledgers, bonds and writings could accommodate more business, but are nevertheless operating at very close to maximum capacity. Moreover, prices of fine papers are strong and incline upward, this being due primarily to the advancing position of raw material, notably wood pulp and the high grades of rag stock.

There is a relatively easy tone to the box board market. Some kinds of board, especially those for corrugating and as used for folding paper boxes, are in active demand, but plain boards of chip and news description are not wanted in proportionately as large volume. There is also keen competition among mills to secure orders, all of which tends to unsettle prices and make for easiness. Quotations on plain chip board range about the $60 a ton f.o.b. New York mark, with news board quoted at the same figure by most mills, and with the probabilities favoring buyers securing some supply at slightly lower prices.

GROUND WOOD — Demand for mechanical pulp is reported to be somewhat erratic. Consumers in certain parts of the country, particularly in Wisconsin, are said to be freely buying and meeting any price within reason, whereas those in other districts are seldom coming into view as buyers. The reason for this situation is nothing else than that conditions have improved perceptibly in some sections, thus permitting producers to grind all the pulp desired in those districts, while elsewhere grinding operaions are still hampered by water shortage, thereby obliging consumers to look for pulp in the open market.

Quotations are on a broad range. Domestic grinders mostly quote in the near vicinity of $40 a ton at producing mills, with down to $37 per ton named in some quarters, while reports say that ground wood has been sold by Canadian manufacturers at $35 and even as low as $30 in rare instances. Between $37 and $38 a ton would appear to be a conservative estimate of an average of prices on prime spruce ground wood for prompt shipment.

CHEMICAL PULP — A firm tone marks quotations on chemical pulp and indications point to a fairly large business being consummated. Paper manufacturers are unmistakably cautious in their current buying, mostly limiting their orders to amounts directly and actually required; on the other hand, the great bulk of pulp offered is meeting with a ready sale. Those on the selling side are quite bullish in their views and contend that the great loss of production in Sweden during the past three months cannot but serve to keep prices firm for sometime to come. Moreover. it is felt that domestic and Canadian pulps are due to enjoy more favorable market conditions during the balance of this year, since consumers will likely look more to such sources for supplies than during most of the last year when they were able to buy Scandinavian pulp at cheaper prices.

There is a steady movement of unbleached sulphite and kraft pulp, and the contract movement of bleached sulphite, soda pulp and other grades is keeping up on a good scale though spot demand for these latter pulps is not as active as for the former. Foreign No. 1 unbleached sulphite is bringing about 3.40 cents a pound ex dock New York, and Swedish kraft pulp around 3.30 cents. Bleached sulphite is quoted at between 4.75 and 5.25 cents a pound for No. 1 domestic, and from 4.50 to 5 cents for imported of No. 1 quality. Bleached soda pulp is selling at about 4.10 cents a pound f.o.b. producing mills.

RAGS — Most grades of papermaking rags are holding their own in price and are being absorbed by mills in fairly large volume. However, demand, aggregately speaking, is not as broad nor as brisk as it was a short while ago. Evidently consumers have covered their needs in part through recent purchases and are now able to operate as buyers in a more reserved manner. For instance, roofing rags are in a quieter market position. Felt paper mills are buying, to be sure, but not in as large tonnage as recently and at slightly lower prices than prevailed a short time back. No. 1 roofing stock of domestic origin is selling at around 1.65 cents a pound f.o.b. New York, and No. 2 packing at 1.55 cents. Foreign dark cottons are bringing 1.60 cents on the dock, and foreign linsey garments the usual $2 a ton premium, or about 1.70 cents a pound ex dock.

New cuttings are at least slightly quieter and buyers are managing to find some supply at shaded prices. New No. 1 white shirt cuttings are quoted at 13.50 to 14 cents a pound at dealers' shipping points, unbleached muslins at 12 cents, light silesias at 8.50 cents, blue overall cuttings at 8 cents, fancy shirt cuttings at 6.50 cents and washables at 5.25 cents. Old whites are steady and in good demand, and old thirds and blues are moderately active at maintained prices.

PAPER STOCK — Weakness is still the outstanding characteristic of the old paper market. In spite of reports of mills buying in fair volume, prices continue to ease, and market levels are reaching the point where it is said collections are being affected, dealers claiming that there is no profit in prevailing mill prices and therefore they are hesitating about gathering usual supplies.

No. 1 mixed paper has receded to where board mills are buying in New York at 80 cents a hundred pounds f.o.b. this city, while folded newspapers are selling at 1.10 cents a pound. Magazine stock is exceedingly

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

weak and has dropped to about 2.15 cents per pound f.o.b. New York for heavy books, and 1.90 cents for mixed books. Shavings are lower in price at about 4.10 cents a pound for No. 1 hard white, and 3.50 cents for No. 1 soft white shavings. Old kraft paper is bringing around 2.15 cents a pound at shipping points, and white news cuttings 2.20 cents.

OLD ROPE AND BAGGING — Old manila rope holds steady in price and is wanted in good amounts by paper mills. Dealers report sales of No. 1 domestic manila rope at 7 cents a pound f.o.b. shipping points, and of foreign rope at close to this figure though consumers generally want to buy the imported stock at lower figures than the domestic article. Old bagging is quiet and quoted at about last prices.

BOOK REVIEWS

SCIENCE AND COMMON SENSE IN WORKING WITH MEN, by Walter Dill Scott, President of North-western University, President the American Psychological Association, and M. H. S. Hayes, member of the Scott Company, Philadelphia, Publishers, The Ronald Press Company, New York. Price, $2.00.

The authors make a strong plea for the recognition of the new point of view in dealing with men in industry. They think we should get away from the old idea of thinking of men as so many kilograms of muscular energy to be bought, exploited and scrapped when occasion demands. They take the position that the old idea is reaping the harvest it richly deserves. They also attack what they call "The Bubble of Paternalism" which sought to determine for labor what was good for it and feed it accordingly.

They write, "Executives are now coming to realize that their workers are not a bulk mass, but a group of individuals. They are recognizing that these workers differ in the things they are fitted to do and capable of doing; that they differ, likewise, in their interests, ambitions, and the things that seem to them desirable; and that as men of differing capacities and desires they require individual adjustment to the opportunities offered them in the field of industry."

In chapters 1-8 they describe in a sane well-balanced way how men vary in capacity of one sort and another and how science may be pressed into service to assist in discovering these variations.

In chapters 9-10 they treat of some of the motives which have been operative in the lives of men.

In chapter 11 they point out how it is possible to turn a job into an opportunity provided due recognition has been given to the first two factors.

In the final chapters, they show clearly that in the constant flux of changing condition and developing personalities to-day's inspirations are to-morrow's platitudes.

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

CANADA'S OPPORTUNITY IN BRITAIN

(From Our London Correspondent)

During a visit to the House of Commons this week, I was informed on reliable anthority that in the course of six months time there will be an imperial conference in London on trade at which Canada, Australia, New Zealand, and other colonies and Dominions will be invited to attend. It was orginally intended to hold the conference in conjunction with the Empire Exhibition in 1924, but the Goverment authorities in London feel that the sooner the conference is held the better for everybody concerned.

Now, at this conference Canadians and Australians will be meeting and no stone should be left unturned in solving the problems of paper tariffs. If Canadians do not speak up and demand the privileges that British paper producers enjoy, they will have themselves to blame. It is a fine opportunity not only to tackle Australian tariffs, but of other colonies and Dominions. Development of trade within the Empire will be the great question for debate and it is up to Canadians to see that their case is properly stated and put at the right time before the conference.

I might say that this conference wants careful watching from a Canadian point of view and the Premier (Mr. Bonar Law), is expected to make a statement about it very shortly. The Australians are most anxious that it should be held about October to enable them to pass legislative measures this year.

Imports Of Wrappings

The British market consumes increased quantities of packing and wrapping papers and Canada enjoys a fair share of the business transacted. There is, however, room for improvement on the part of the Dominions. Of course price goes a long way in creating a demand for Scandinavian products and the British buyers study this side of the question very materially in these days of economy. Canadian wrappings are getting a good hold on the market and it would be a good thing if shippers could obtain samples and prices of the products of other countries competing with them in English centres. The London agents should be able to supply these, with the assistance of the Canadian Chamber of Commerce in London. For the information of wrapping paper mills I give the imports for February last and the imports for January & February this year compared with the same period in 1922:

	Feby.-cwts.	January - Feby.	
	1923	1922	1923
Finland	28,705	31,947	62,327
Sweden	96,432	98,727	221,983
Norway	56,287	79,775	115,530
Germany	56,468	68,351	104,807
Belgium	5,968	14,883	13,058
Canada	11,213	15,275	17,982
Other Places	20,474	39,882	40,614

The figures show the competition that Canada has to meet and it is interesting to compare the remarkable increase in shipments from Scandinavia and Germany. The latter is at present suffering from a setback owing to the Ruhr occupation by the French. Foreign imports, however are cheap whereas the Canadian have quality. The difference between cheap goods and quality is told in the import figures.

PULP WOOD FOR PIT PROPS.

The three Swedish associations of paper and pulp producers, Svenska Cellulosafoereningen, Svenska Traemassefoereningen and Svenska Pappersbruksfoereningen, are demanding of the Ministry of Agriculture that wood from Crown forests suitable for the production of pulp and paper should be reserved for the home industries and not exported in the form of pit props.

While hunting for the key to the situation, be sure the other fellow does not pick the lock and beat you to it. — Making Paper.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the district of Sudbury, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what theey are prepared to pay, per thousand feet Board measure, for the following classes of timber,, over and above the upset prices in addition to Crown dues:

Red and White Pine	upset price	$6.00 per M ft B M
Spruce (too large for pulpwood)	—	$5.00 per M. ft. B. M.
Jackpine (banksian)	—	$2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, ,is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and markeed plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Toronto, April 16th, 1923 Minister of Lands and Forests.

N. B. — No authorized publication of this notice will be paid for.

President McKinley

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. Gardenvale, Que., May 3rd, 1923 No. 18

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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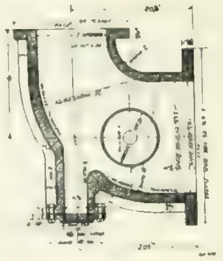

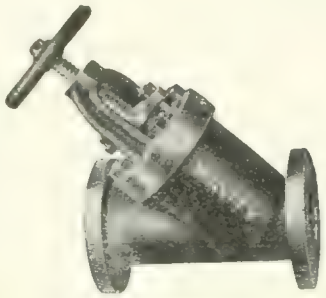

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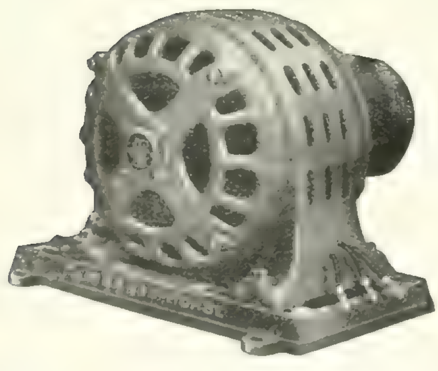

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EDITORIAL

WAGES SETTLED

A certain sense of security settles on the pulp and paper industry when the annual agreement as to wages is reached between the Unions and those manufacturers who employ union labor. These are in sufficient number, so that the union scale practically rules in the industry. Some mills pay more than the scale, others, because of the local conditions, pay less in money which may be the equivalent, however, in real wages. The new wage scale became effective on Tuesday, as detailed on another page.

Wages in many lines have been increased this spring, and prices are increasing also, as they must, because labor is the largest item of manufacturing cost. The higher the product is carried toward the ultimate finished commodity, the greater this factor becomes and the more insignificant the intrinsic value of the initial raw material, whether it be wood, cotton, wool or iron. In fact the labor factor is automatically boosted by the increased value of each intermediate product. But labor can keep the selling price stable, or at least minimize any increase by giving more efficient service — a little quicker handling of pulpwood, a little less waste in barking, a few more chips in the digester, a little more careful cooking so as to reduce waste in screenings or over-cooking, a little more attention to machinery so as to save lubricating oil and the time and material for re-babbitting and time lost in shutdowns, a little more care with water and steam to save power in pumping and waste of coal, even fewer stolen and broken lamps. These are a few of the things that come to mind. It is the spirit of economical production that will help keep down the price of goods.

The spinner, the weaver and the tailor get higher wages—and spend the increase for the higher prices in suits and coats, and higher priced boots, books, boxes, beans, bacon, and bread, because increases are contagious. Even the editor may get one someday.

The paper industry has been running along on a slim margin of profit, depending on capacity production to keep the balance on the right side of the ledger. But woodmen's wages were higher last winter, so wood costs more; pulpmakers' wages are increased, so pulp costs more; mill workers' wages are advanced, so prepared rag pulp is at a higher value; papermakers' wages are increased also, and since labor represents 85 per cent of the manufacturing cost of paper and material costs are also higher, who is going to pay the difference? Most mills either lost money for many months in keeping machinery going and men employed, or passed their dividends — which they owe their stock holders. The First National Bank of Boston says that wages are already at the war level. We don't want another period of inflation, but it looks as if something of the kind is being forced on us by those who think they are better off by having $1.25 in their hands to pay for a dollar book — or $6 for a silk shirt when a $2 or $3 cotton one would wear longer. The only antidote for higher wages is harder work. Let's ALL give it.

A SOURCE OF ENCOURAGEMENT

It is a source of encouragement to read that hydroplanes are to be used by the Province of Quebec in making a systematic inventory of the forest resources of the province. This, it is estimated, would be accomplished in a few years. A gratifying feature of the plan is the expectation of co-operation from the Federal government. A staff of air pilots and aeroplane mechanics should be kept in training, and there is no branch of the Service which lends itself better to the needs of the day than the Air Force.

A knowledge of our resources, as to where, what, and how much they are is fundamental to their development. A lack of this knowledge is responsible for more than one awkward situation today. No business man would conduct his business — he couldn't, lacking such fundamental information as an inventory. Yet the business men of Canada have let our governments conduct these departments on the basis of somebody's say-so and on out of date estimates that were often grossly incorrect in the first place. The result is that some super-generous concessions have been given and some that have been sadly insufficient. Both are bad. The way to improve the situation, and steer straight in the future is to KNOW what we have. The way to know is to make a survey, and the best way to make this survey is by using air craft.

Let the Provincial and Dominion Governments get together on a program and get busy.

A BIT OF PHILOSOPHY

It is just a year since Mother went away, and I have been thinking about it — not sadly or sorrowfully, but with many a smile. There are more happy memories in thinking of her than of anyone else.

A few weeks ago, while attending the Paper convention, I went out a few miles from New York to the place where we children gathered a year ago. I was alone this time, and as I stood under the dogwood tree that was still bare — I thought. I was standing in Mother's presence — and Father's too; thoughts of them are inseparable. But there was no feeling, no possibility of thinking, that Mother and Father were under the new-springing grass. Their presence was with me. Not the Doyle variety, but rather the spirit that had been growing into my life for forty years. I prayed — not for them, but for me, grateful for their lives and their love. An hour later I was back in New York.

Since then two lines of thoughts have run in my mind. I wondered a bit as to what was the best thing Mother left me. It did not take long to decide; in fact, before the station was reached I knew; faith in God and the love of Jesus. She brought them to me; it is up to me to keep them. They are probably the most potent factors in life, the basis of nobility of character and of fair dealings among men.

And my mind reverted to a sudden surge of feeling as I stood by the grave side. It brought up the query: Why do hearts break? Perhaps it is foolish to apply an engineering idea, but may it not be due to internal pressure — emotion, or love pressure, if you like. Just think of the heart — the emotional "heart" is closely identified with the physical, as a boiler running under normal pressure, when suddenly one of the main steam outlets is closed. This may have been enlarged to take practically the whole flow if one has been watching by the sick bed of a loved one. It seems that one of three things may happen; the boiler (heart) breaks, the pressure is relieved by enlarging old or making new outlets, or the fires are drawn and the heart grows cold, the boiler rusts.

This is just a little philosophy; it may start some one thinking about things other than prices, profits, and plant troubles, and bring him back to them with a calmer, clearer mind.

IS RAPID EXPANSION ADVISABLE?

As our readers are aware, many newsprint machines are either being installed or on order. This involves a large increase in production, and naturally raises the question — What, if any, effect will this enlarged production have on the industry? Is there in fact, any danger of Canadian newsprint going beyond the saturation point, with the result of creating excessive competition and unprofitable prices?

Those engaged in the industry are by no means agreed on this policy of expansion. There are those who are of the opinion that the Canadian mills should go slowly, that there is a real danger of overdoing it, while others believe that we have not yet reached the point where Canada should call a halt, and they are backing this view by installing and ordering additional machines. Besides the existing companies, others are being organized to go into the newsprint business.

It is pertinent to point out that at various stages of the expansion of the newsprint trade, predictions have been made to the effect that over-production was at hand, but the larger output has been gradually absorbed, and today Canada is turning out newsprint at a greater rate than at any time in the history of the industry. While this is true, it is equally true that this country cannot go on indefinitely increasing production. The capacity of our customers to absorb newsprint must be computed on established facts, which are easily obtained. To manufacture in excess of those requirements is to incur hazards which are not in the interest of the industry as a whole. If the full program of additional machinery, as outlined by the existing companies, is carried out, it is obvious that new markets will have to be opened up. Where are they to be found, — Great Britain, South America, Australia? In the alternative, fresh customers will have to be found in the United States, and this market is likely to be affected by an influx of Scandinavian paper that will be released by the expanded capacity of British mills.

It is argued by some that while for a time, a surplus of production and lower prices will be inevitable, matters will right themselves in the long run. This assumption is based on the view that reduced values will involve the closing down of American mills, or the switching of these mills to other classes of paper. Such mills will, in fact, be unable to do a profitable business at the low prices — they will not be in a position to compete with Canadian mills, with their lower cost of production, due to abundant and convenient supplies of pulpwood, combined with cheap power. The effect will be to eliminate a number of competitors, to advance prices, and to give an enlarged market for Canadian newsprint. Such is the prediction — how it would work out is another story. It would seem to be the part of wisdom to expand the industry gradually as population and consumption per person increase, rather than by jerks, with attendant dislocation of relations between supply and demand, cost and selling price, producer and consumer.—F. H. D.

COBWEBS

How much time, money and efforts will be lost for want of a good map of the Rouyn area where gold has been discovered? In few weeks an aeroplane photo map could be made that would accurately delineate this district and serve not only the prospectors but the timber operators who are interested. In no other way can so complete and accurate a map be obtained so cheaply.

The special Convention numbers of Paper Trade Journals, Paper Mill, and Paper have been received. They are certainly fine. We congratulate the editors and publishers of each

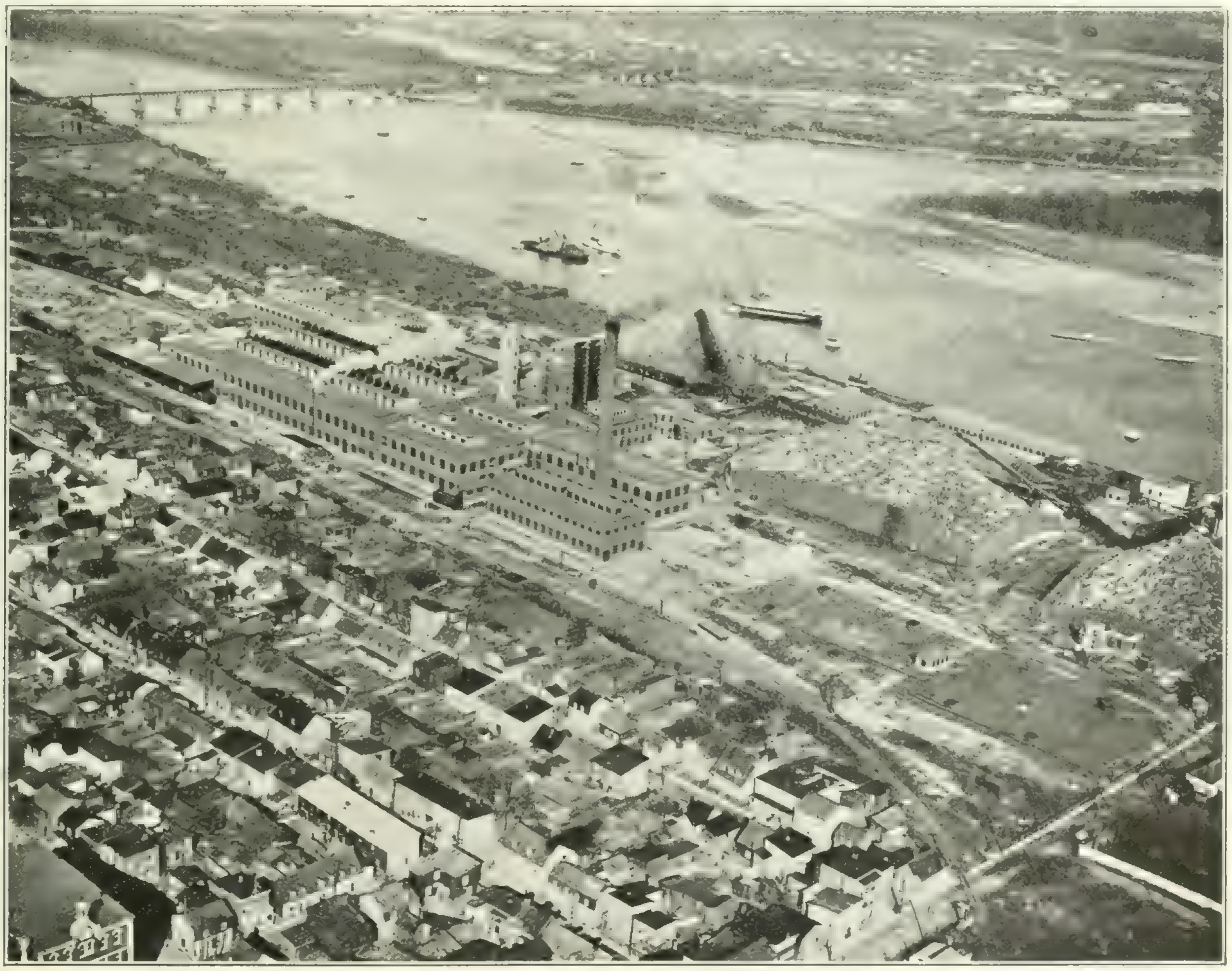
A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

Samuel de Champlain, as he was exploring from Quebec toward the Great Lakes, discovered a broad river coming into the St. Lawrence from the north, divided at its mouth into three channels by two islands. He founded a settlement here in 1634 and called it Trois-Rivieres, the Three Rivers of English-speaking people. That it is a strategic point for the production of pulp and paper is proved by the number of successful mills in the vicinity and the rapid, healthy growth of the city since their coming. The St. Maurice River, clear and broad, taps the great forests of the north and furnishes the vehicle that brings the logs to the saws. Its energy, converted at Shawinigan Falls and Grand'Mere, not far from its confluence with the St. Lawrence, furnishes 275,000 kw. of hydro-electric power to neighboring industries. The clearness of its water materially aids in the production of a "bright sheet," and steam boilers fed from the St. Maurice show the sustained efficiency that can come only from an ideal feed water.

The transportation facilities here, midway between Montreal and Quebec, are excellent. The St. Lawrence furnishes a water route for incoming pulp wood and for finished paper to Great Lakes ports, Atlantic Coast and European cities during seven months of the year. Fuel-oil tankers steam up from the sea to dock and discharge to mill storage tanks. The canal route via Lake Champlain furnishes a much-used outlet directly to New York City. The Canadian Pacific Railroad with ample sidings keeps the local industries in touch with the whole continent.

In such a setting is the newest mill of the International Paper Company, known as the St. Maurice Lumber Company paper mill. It is the business of this plant to produce news paper composed of about



Aerial view made for the Pulp & Paper Magazine by Fairchild Aerial Service, of the pulp and paper mills of the St. Maurice Lumber Co. at Three Rivers (subsidiary of the International Paper Co.)

---

* Chief engineer the International Paper Company.

† Power and Mining Department, General Electric Company.

NOTE: The "Pulp and Paper Magazine" is indebted to the "Electrical World" for the use of these excellent cuts.

75 per cent mechanical (ground-wood) pulp and 25 per cent chemical (sulphite) pulp, made from logs that average about 60 per cent spruce and 40 per cent balsam.

The four 165-in. paper machines, to which the whole organization and structure are subservient, were put in production in the past summer — the last one in August. They are already making over 275 tons of "news" per day, and their ultimate capacity, after the installation of the seventh grinder unit and the third digester, will be more than 300 tons per day. The present daily production represents more than 1,200 acres of paper, or a sheet 12½ ft. wide and 875 miles long, turned out at the rate of over 36 miles per hour.

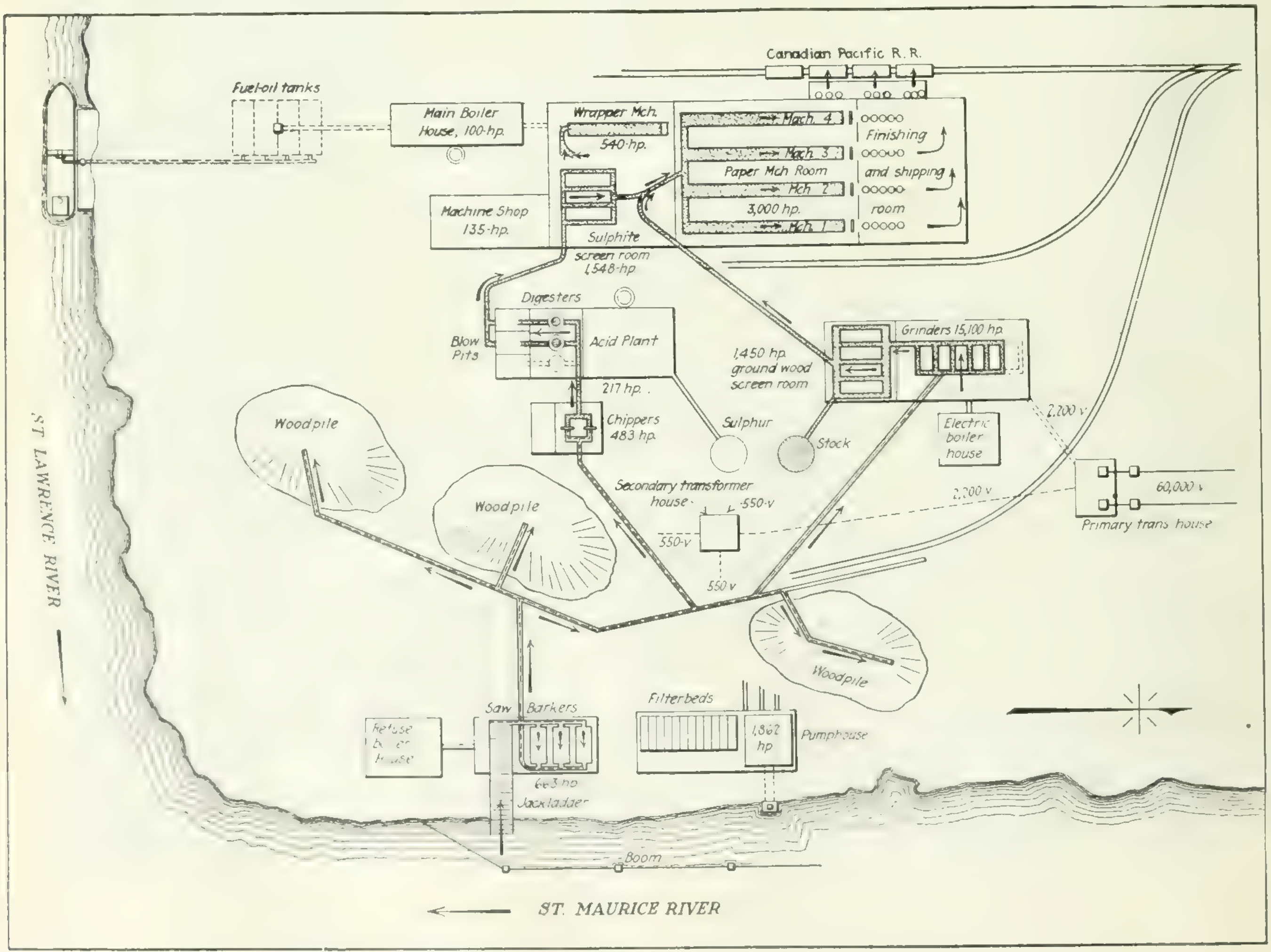
One ton of "news" as now being produced at this mill (based on one month's figures) requires a little over a cord of wood, 1,347 kw-hr. of hydro-electric power, 7.21 tons of steam produced by 3⅛ barrels of fuel oil for mill heating, pulp cooking, paper drying and for direct-current electric power for driving the paper machines; fifteen man-hours of labor and supervision, and five and a quarter minutes for production.

The logs, 13 ft. to 16 ft. in length, are sawed and barked during the summer months, and the surplus over current demand up to 66,000 cords can be stored for winter. The four fuel-oil tanks hold 150,000 barrels, or more than six months' supply of Mexican residue. Two tranmission lines and transformer banks can furnish 24,000 kw. of hydro-electric power. The pump and filter plant has a capacity of 20,000,000 gal. of filtered water per day. The main boiler house can turn out more than 6,000 boiler-horsepower continuously.

The outstanding feature of this mill is the extent to which electric power is used, together with the novelty of many of its specific applications. Every application of power is electric, and it is the only 100 per cent electric paper mill in the industry.

Two 60,000-volt, 60-cycle, three-phase transmission lines come from the north to the main transformer house at the northern limits of the mill yard. Six single-pole, 600 amp., 110,000-volt disconnecting switches lead to the two three-phase, four-tank, 60,500/72,500-volt lightning arresters, which are of the electrolytic outdoor type. Six 600-amp. cylindrical suspension outdoor choke coils are interposed just outside the 100,000-volt wall bushings. After going through two 600-amp., 66,000-volt, triple-pole, single-throw, remote-control oil circuit breakers the voltage is stepped down from 66,000 to 2,300 by means of six 4,000-kw. oil-insulated and water-cooled transformers.

Well protected in a room at the end of the transformer house is the four-panel instrument board, where the incoming power is metered on the 2,300-volt side of the transformers. The instruments installed are watt-hour meters, indicating and curve-drawing wattmeters, indicating voltmeters and ammeters, ground wattmeters, indicating voltmeters and ammeters, ground detectors for the cable system and an indicating power-factor meter. On these panels are

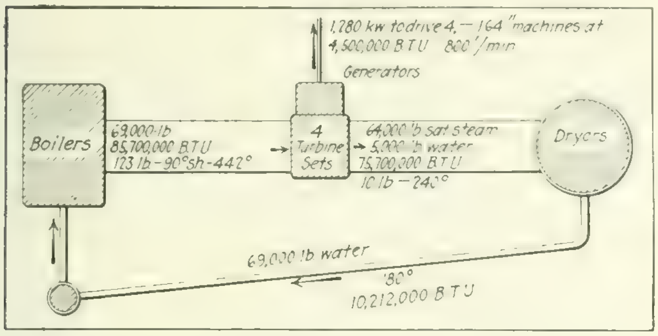


General layout of paper mill plant showing buildings and rail and water shipping facilities also mounted all necessary instrument protective devices. The entire equipment of this main transformer house was furnished by the Canadian Westinghouse Company with the exception of the transformers which were built by the Westinghouse Electric & Manufacturing Company.

A tunnel 150 ft. long takes 2,300-volt power from the main transformer house to the switch house alongside the wood grinder room, where there is a connected load of 15,100 hp., with another 2,400-hp., unit on order. The conductors through the tunnel are eight three-conductor, 1,000,000-circ. mil., 2,300-volt cables.

Secondary Transformer House for Mill Supply

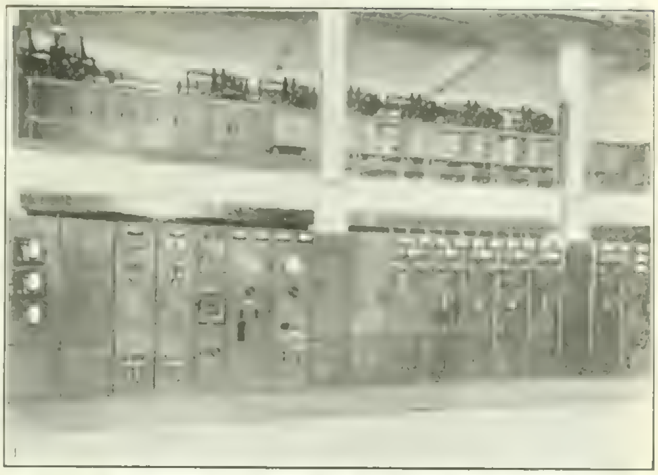
There is a secondary transformer house located conveniently for general distribution to the mill and connected to the main transformer house, 960 ft. away by two sets of twelve 4-in. ducts with manholes about 150 ft. apart. Twelve ducts each contain a three-conductor, 600,000-circ.mil, 2,300-volt cable; five ducts each contain a three-conductor, 300,000-circ.mil. 600-volt cable, and another contains a two-conductor, No. 2/0 cable for 125-volt direct-current switch control.

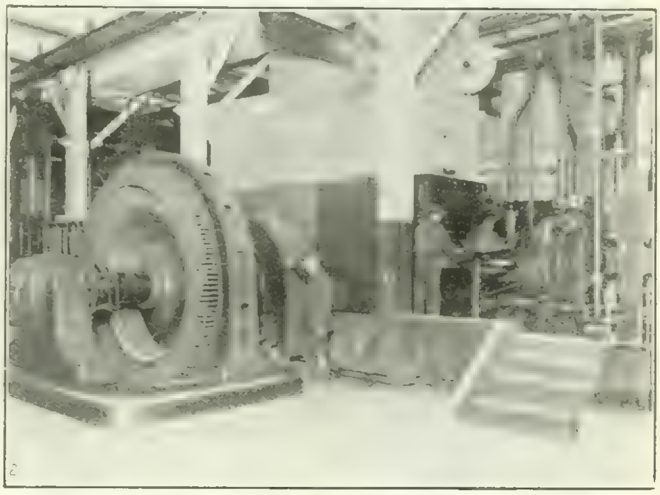


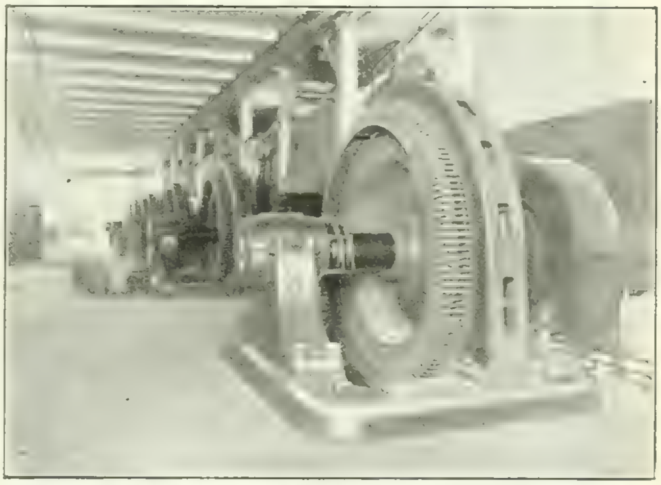
How the heat is distributed in the steam cycle used in the mill

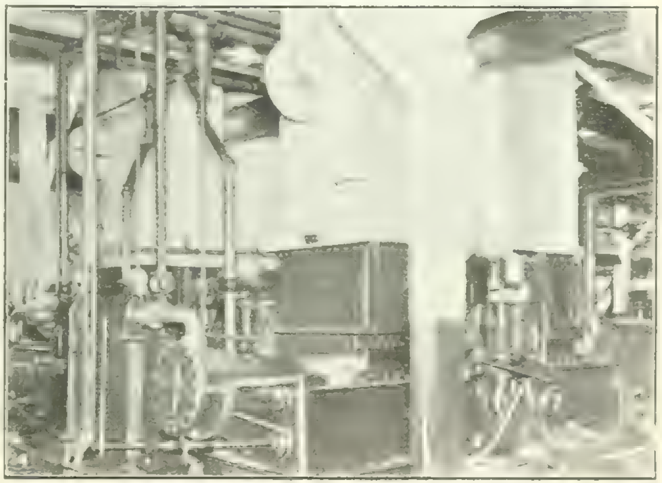
The secondary transformer house steps the 2,300-volt circuit down to 550 volts for general distribution throughout the mill and yards. There are mounted here twenty-four 1,200-amp., single-pole, single-throw, 2,200-volt disconnecting switches, twelve 4,000-amp. similar switches and two 2,000-amp. automatic solenoid-operated oil circuit breakers. The transformers are four in number, rated at 2,000 kw. and 2,200 600 volts, and are single phase, oil-insulated and water-cooled. The fourth transformer can be phased in with any other two. There is a 10-kw., 550-110/220-volt lighting transformer installed here, as well as a battery-charging set and a storage battery for switch operation.

Protection is provided by twenty-eight 600, 400 and 300 amp., triple-pole, single-throw, oil circuit breakers, very neatly and conveniently connected and mounted.









Synchronous Motors Grind the Wood

No. 1. Main switchboard in ground wood mill controls six synchronous motors aggregating 14,400 h.p.

No. 2. Hydraulic rams force the logs against the synchronous motor-driven grinder. At right is automatic motor load regulator which is actuated by hydraulic pressure.

No. 3. Six of the seven 2,200-volt, 2,400-h.p. synchronous motors which drive pulp grinders.

No. 4. Every three hours a stone-burring lathe is automatically brought into operation without stopping production. The toothed wheel in the magazine feeding pulp grinders registers the cords of wood fed to machine.

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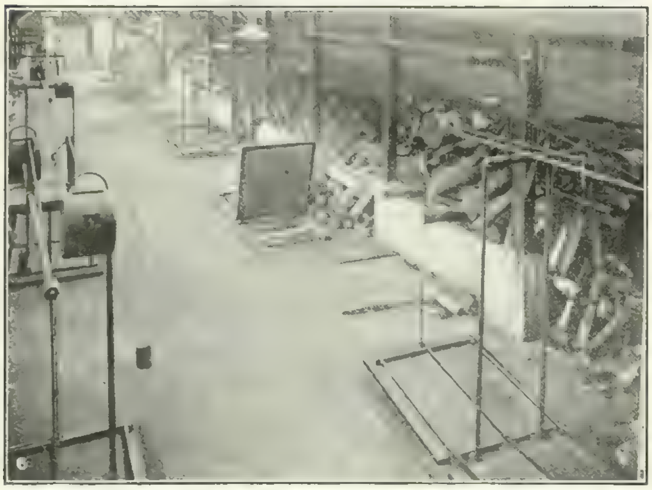

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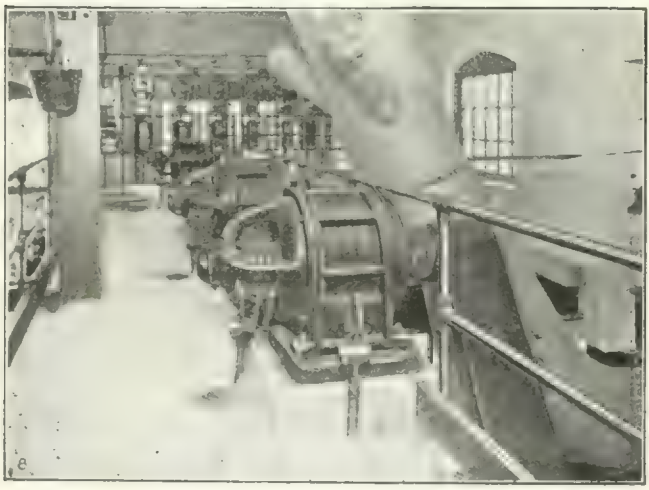

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Eighteen switchboard panels carry curve drawing and indicating instruments for metering the power to various mill divisions.

Four principal lines of ducts radiate from this secondary transformer house and branch off as required to serve the widespread areas of motor applications. The aggregate length of 4-in. ducts, including spares, installed is 15 miles, with access through about thirty-five manholes.

The connected three-phase, sixty-cycle induction motor load totals 34,000 hp. in about 400 motors, practically all controlled by oil switches and compensators or drum controllers so installed that the motor and its connected load is in sight from the control point. An important detail here is that all fuses are eliminated.

Three electric-steam generators are being erected in a separate boiler house close to the 2,300-volt grinder-room switch house. These boilers will have a combined capacity of 1,200 boiler-horsepower and can take 12,000 kw. They will have two functions. They will make available to the mill in the form of steam, at no extra cost other than overhead, the "below-peak" energy that would otherwise be paid for and not used. This procedure, of course, reduces the fuel consumption at the main boiler house to that extent. On Sundays, or at any other time of light steam demand, the 1,200 boiler-horsepower of the electric-steam generators will make it possible to shut down all the oil-fired boilers.

A log boom anchored to piers off shore harbors the logs floated down from the logging camps, and from this inclosure they are hauled sidewise in close formation on a multiple chain conveyor or "jack ladder" to the saws, which can be elevated out of the way of ice during the winter. At the head of the jack ladder they are transferred to another multiple-chain conveyor, which is equipped with jaws that hold securely the individual logs and carry them past the three "slasher" saws that cut them into 4-ft. lengths.

As the 4-ft. logs, end to end, leave the saws, they fall onto a conveyor which takes them endwise to the barking drums, of which there are three. These are huge tumbling barrels having straight-channel iron staves with 2-in. openings between. The drums are mounted horizontally. Both ends are open, and the logs are continually fed into one end and are continually falling over the stationary dam across the other end. The drum is rotated, and at the same time a spray of water is played on the logs. The bark is rubbed, beaten and washed from about 90 per cent of the logs in this process, and those imperfectly barked are returned by a conveyor to the same drums.

A maximum of 16,000 logs, together measuring more than 50 miles in length, has been drawn from the river,

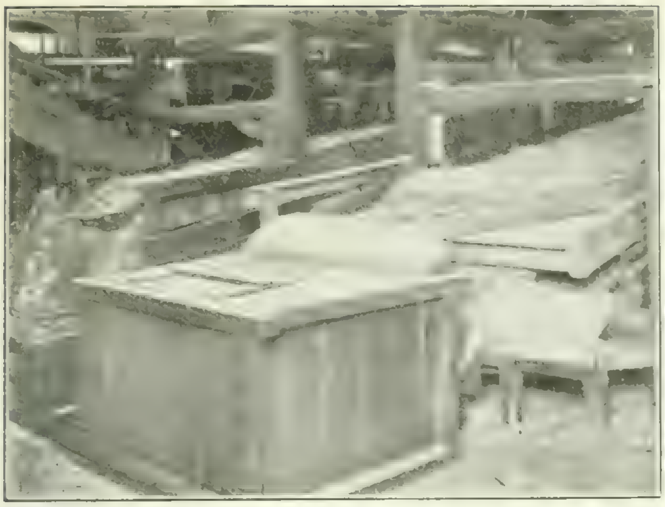
Grinding Wood and Cleaning Pulp

No. 5. One of two 220-ft. conveyors above charging floor in ground wood mill for distributing logs to service piles.

No. 6. From the 200 service piles the logs are placed in the magazine grinders from the charging floor in the ground wood mill.

No. 7. In the screen room there are four Sherbrooke revolving screen knotters in the rear of four rifflers each having eleven submerged dams for extracting sand.

No. 8. Six motors of 15 h.p. each drive the deckers. Controllers, meters and switches are in the background.



Chip Screens Grade the Chips and Return Oversize Chips to the Chippers

Logs Received by Rail are Handled by a Stacker and Conveyor System

sawed, barked and delivered to the yard conveyors in a day by this wood-preparing plant. The barked logs are then taken in charge by the yard system of cable conveyors, which convey them to the three piles, stack, reclaim and deliver them to the sulphite and ground-wood departments. These cables aggregate 3,000 ft. in length in ten outdoor units.

The motor controllers and protective devices are concentrated in a special control house from which all the conveyor drives can be seen. The control units and instruments are thus protected from vibrations and shocks that they would be subject to if mounted on the conveyor structure.

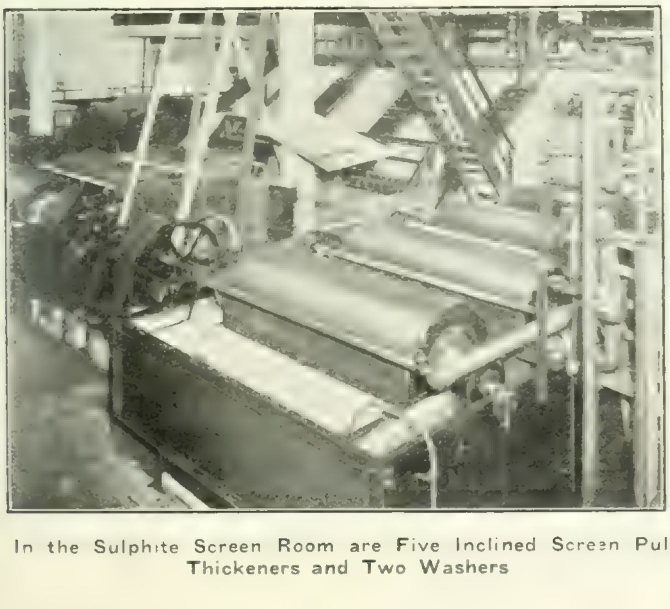
The barking drums listed in Table I and all the yard conveyor motors in Table II are, it will be noted, of the wound-rotor type on account of the very heavy starting duty with which they are at times confronted. This is especially true of the yard conveyors, which may have to start with a full load of logs or when impeded with snow and ice. Drum controllers are used in the secondary windings with overload oil switches in the primary windings, thus avoiding the use of fuses.

TABLE I.—ELECTRIC MOTOR DRIVES IN WOOD PREPARING PLANT

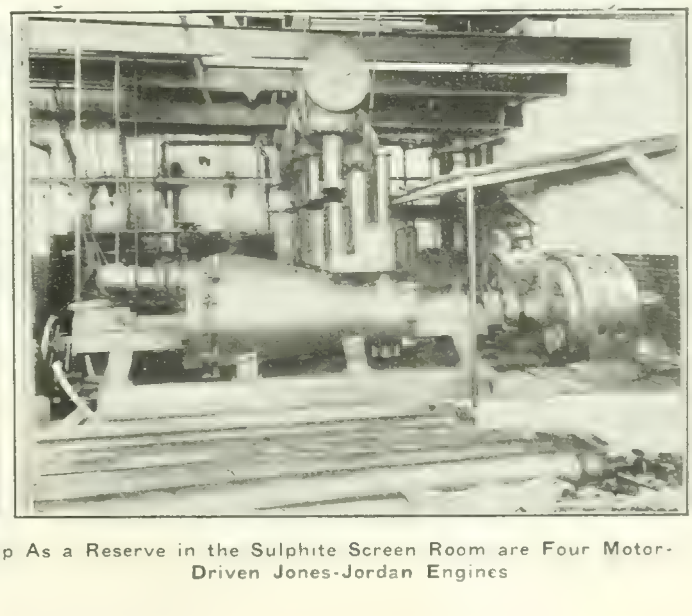
(Total connected load 663 h.p. 550 volts, alternating current.)

Log haul, three saws and knife barker:	
Belts, one 100-h.p., 690-r.p.m., squirrel-cage.	C. W.*
Conveyor, saws to barker:	
Gears, one 25-h.p., 860-r.p.m., wound rotor.	C. W.
Three barking drums:	
Belts and gears, three 150-h.p., 690-r.p.m., wound rotor.	C. W.
Conveyor, return logs to barkers:	
Gears; one 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, wide for bark:	
Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, logs to yard conveyor:	
Gears; one 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, from knife barker to yard conveyor:	
Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, bark and sawdust to boiler house:	
Gears, one 15-h.p., 860-r.p.m., squirrel-cage.	C. W.
Saw sharpener:	
Gears, one 3-h.p., 1,800-r.p.m., squirrel-cage.	Cr. Wh.†

* C. W. indicates Canadian Westinghouse. † Cr. Wh. indicates Crocker-Wheeler.



In the Sulphite Screen Room are Five Inclined Screen Pulp Thickeners and Two Washers



As a Reserve in the Sulphite Screen Room are Four Motor-Driven Jones-Jordan Engines

TABLE II. ELECTRIC MOTOR DRIVES ON YARD CONVEYORS

(Total connected load 360 h.p., 550 volts, alternating current)

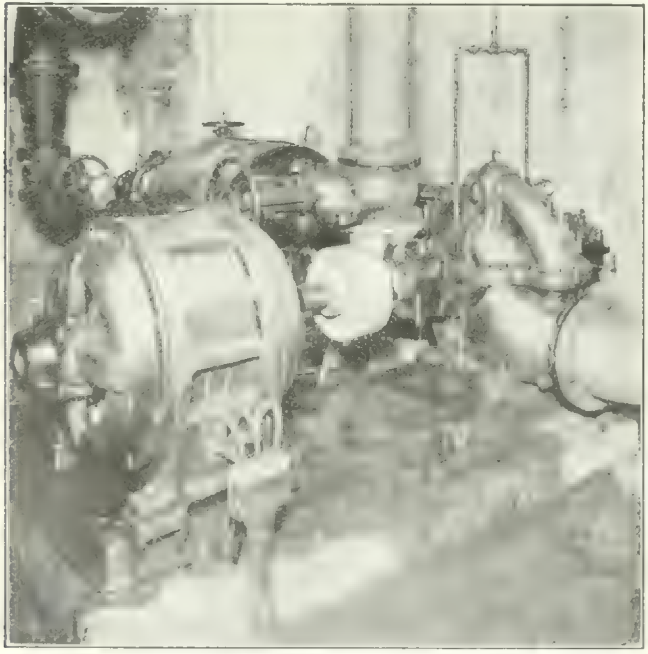
Wood preparing plant to storage system:	
Gears, one 35-h.p., 860-r.p.m., wound rotor	C.W.*
To south pile:	
Gears, one 25-h.p., 860-r.p.m., wound rotor	C.W.
To middle pile:	
Gears; one 25-h.p., 860-r.p.m., wound rotor	C.W.
To north pile:	
Gears; one 50-h.p., 860-r.p.m., wound rotor	C.W.
Along north pile:	
Gears, three 35-h.p., 860-r.p.m., wound rotor.	C.W.
Three stackers:	
Gears, three 50-h.p., 860-r.p.m., wound rotor	C.W.
Portable conveyor:	
Gears; one 15-h.p., 860-r.p.m., wound rotor.	C.W.
From storage system to chipper building:	
Gears; one 25-h.p., 860-r.p.m., wound rotor.	C.W.
From storage system to grinding floor:	
Gears; one 50-h.p., 860-r.p.m., wound rotor.	C.W.

* Canadian Westinghouse.

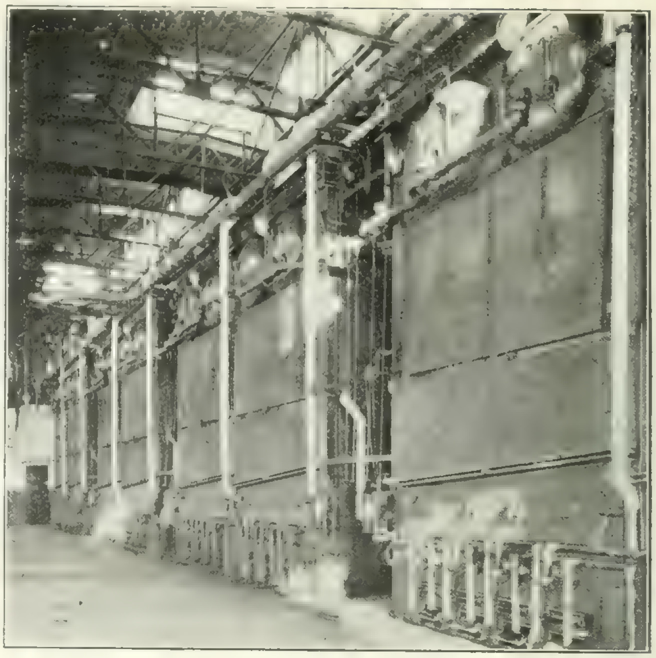
Pump and Filter Plant for Water Supply

For supplying the enormous amount of water necessary for paper production a pump and filter plant is installed at the river bank. The pump pit contains ten pumps with a combined capacity of 55,800 gal. per minute, or enough to supply a city of 700,000 population. The raw water and fire pumps are below the low-water level of the river. The protective devices, meters and control elements are installed on a gallery overlooking the pit, and they are thus above any danger of flooding. Power is supplied from the secondary transformer house, about 150 ft. away, through three three-conductor, 300,000-circ.mil. 600-volt cables and two three-conductor, 200,000-circ.mil cables. The twenty sand-filter beds occupy an extension, 40 ft. x 180 ft., and they can filter 20,000,000 gal. of river water a day.

The service rendered by this pumping plant is vital, and the pump-pit environment is so exacting from the electrical standpoint that this equipment received the most critical attention in its selection and installation.



Motor-Driven Centrifugal Pumps are Required for Handling White Water and Stock



In the Main Boiler House are Eight 500-Boiler-Horsepower Oil-Fired Boilers

The two electric fire pumps are supplemented by a steam fire pump designed for 1,500 g.p.m. against a head of 280 ft. Wherever it is possible the pumps are so designed and connected that they can pump to the fire mains. Cross-connection with the city provides for mutual protection. The whole rotating weight in the vertical pumps is carried on suspension bearings at the tops of the motors. These bearings have never required adjustment.

The main boiler house lies along the railroad siding between the machine room and the fuel tanks near the southern extremity of the yard. A battery of eight 500-hp. B. & W. water-tube oil-fired boilers extends in a single row down the center with a clear clean space all around them. An inclosure at the north end contains the active electric and the stand-by steam boiler-feed pumps, the fuel-oil pumps and the steam-turbine-driven 180-kw., 550-volt alternating-current emergency generator which is used for lights and machine shops should the hydro-electric power be interrupted.

About 30,000 gal. of fuel oil are being used per day to generate about 5,800 boiler-horsepower from seven boilers at 1.66 load factor. The normal boiler pressure is 125 lb., 95 deg. F. superheat, and the evaporation rate is 14 lb. actual, 15½ lb. equivalent. The draft is 0.1 in. of water, CO_2 content of flue gases 13 per cent, and temperature of the flue gases 550 deg. F. The output of two boilers is required for heating the mill in winter. The feed water is admitted at 205 deg. F. from the dryers without heating and is made up from soft filtered river water.

(To be continued)

HARLAND COMPANY MOVES

The Harland Engineering Co., of Canada, Limited have removed their office to much more commodious premises at 291, Mountain St., Montreal, P.Q. to which address all communications from now on should be addressed. Telephone is now Uptown 3007.

Application of Steam Traps to Paper Machine Dryers

By L. D. GOFF, Armstrong Machine Works,
Three Rivers, Mich.

To insure the best of satisfaction, a steam trap installed on paper machine dryers should be protected by an efficient separator which will not only deliver dry steam to the paper machine but will remove a considerable portion of the oil and sediment usually carried by exhaust steam. Although the type of trap described here has the ability to handle quantities of oil, grease and sediment which would prove fatal to other types of traps, yet it has certain limitations, and for this reason the installation of an efficient separator is always recommended.

To meet a demand for an economical and efficient drainage system for paper machine dryers, where the temperatures carried on the machine may be easily and accurately controlled, where maximum efficiency is desired, an installation is suggested using steam traps in connection with a vacuum pump as shown on the diagram. The operation of this is as follows:

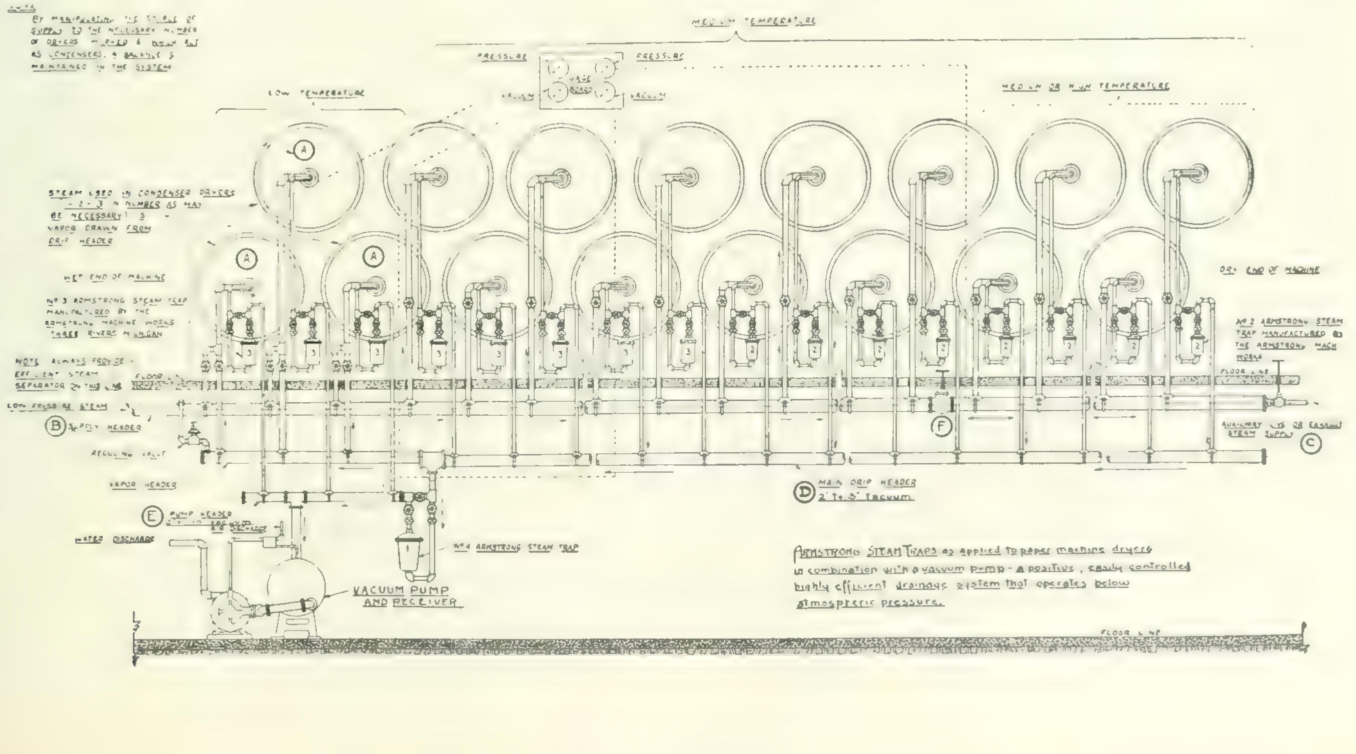
The illustration shows merely a diagramatic sketch of sixteen dryers on a paper machine. The method of draining paper machine dryers may be applied to any paper machine regardless of the number of dryers.

The piping arrangement is so planned that the machine may be divided into any number of sections and different temperatures carried on each section. Three or four dryers on the wet end of the machine are connected to be used as condensers, the main steam header is divided at the dry end of the machine by a valve (F) that high pressure steam may be carried on a predetermined number of dryers. All dryers are drained with traps, and all but those used as condensers discharge into the main drip header (D). All dryers, with the exception of those used as condensers, are supplied through the main steam header (B), this being divided at the dry end as mentioned above so that a higher pressure may be carried on the dry end section of the supply header (C), than is carried on the balance of the header.

The supply to the dryers, which operate as condensers, is so arranged that steam may be supplied from the main supply header or three dryers may draw the steam from the main drip header. The discharge of the traps draining these dryers goes to the pump header (E) which is drained by the vacuum pump and on which any desired vacuum may be maintained. The main drip header is drained by a large trap which discharges into the pump header.

In operation we will assume that three temperatures are desired on the machine, the high temperature being maintained by the use of live steam at say 5 lbs. pressure, and that exhaust steam at 2 lbs. pressure is being used in the center section of the dryers. As before stated, the traps draining all of the dryers, excepting those acting as condensers, discharge into the main drip header. The condenser dryers draw flash or vapor from the main drip header, this vapor being the result of water at 2 and 5 lbs. pressure being discharged by the traps draining the center and dry end section of dryers. In drawing steam from the main drip header the condenser dryers create a vacuum on the main drip header of, we will say, 4 inches. This is possible as we will maintain a vacuum on the pump header by means of the vacuum pump of from 6 to 8 inches or higher than the vacuum maintained on the main drip header. The condenser dryers which are creating a vacuum of 4 inch discharge into the pump header on which there is a higher vacuum.

It will be apparent then, that a vacuum is maintained on all drip headers into which the traps drain-


NOTE
BY MANIPULATING THE STROKE OF SUPPLY TO THE NECESSARY NUMBER OF DRYERS MARKED A DRAW SET AS CONDENSERS, A BALANCE IS MAINTAINED IN THE SYSTEM
MEDIUM TEMPERATURE
PRESSURE
PRESSURE
GAGE BOARD
VACUUM
VACUUM
LOW TEMPERATURE
MEDIUM OR HIGH TEMPERATURE
A
A
A
STEAM USED IN CONDENSER DRYERS 1-2-3 IN NUMBER AS MAY BE NECESSARY IS VAPOR DRAWN FROM DRIP HEADER
WET END OF MACHINE
No 3 ARMSTRONG STEAM TRAP MANUFACTURED BY THE ARMSTRONG MACHINE WORKS THREE RIVERS MICHIGAN
NOTE ALWAYS PROVIDE EFFICIENT STEAM SEPARATOR ON THIS LINE
FLOOR LINE
LOW PRESSURE STEAM
B SUPPLY HEADER
REGULATING VALVE
VAPOR HEADER
E PUMP HEADER
WATER DISCHARGE
No 4 ARMSTRONG STEAM TRAP
VACUUM PUMP AND RECEIVER
3
2
F
DRY END OF MACHINE
No 2 ARMSTRONG STEAM TRAP MANUFACTURED BY THE ARMSTRONG MACH WORKS
FLOOR LINE
AUXILIARY LIVE OR EXHAUST STEAM SUPPLY
C
D MAIN DRIP HEADER 2" to 5" vacuum
FLOOR LINE

Armstrong Steam Traps as applied to paper machine dryers in combination with a vacuum pump - a positive, easily controlled highly efficient drainage system that operates below atmospheric pressure.

ing the paper machine dryers discharge. Because of this, it is possible to operate the machine at very low pressure, this, of course, depending on the drying capacity. With the arrangement of the supply piping to the dryers operating as condensers, it is possible to operate with one or two or all of them as condensers as may be desired. The installation of a reducing valve is suggested which will take steam from the main steam header and supply it to the main drip header, this valve to function when the vacuum in the main drip header runs above a predetermined point. In this manner it is possible to use three or more dryers as condensers and assure their operation at any desired temperature. By drawing vapor from the main drip header to the condenser dryers, we utilize the heat which otherwise must be reduced with cold water in order that the vacuum pump will function.

Where it is desired to carry two or three different temperatures on a machine, the advantages of this system are quite apparent. There are other advantages such as the utilization of all of the heat of the steam, eliminating the use of cooling water at the vacuum pump, the insurance of each dryer operating at maximum efficiency because of its being really handled as a separator unit and there is a simplicity of circulation which is not unlike that of an ordinary steam heating system where there is a trap on each individual radiator which has been one of the most successful systems.

There are other advantages. Providing the machine has sufficient drying capacity, it is possible to operate at a very low steam pressure because of the vacuum maintained on the drip and drain headers. This vacuum is not maintained by pumps, but by the condensing action of the wet end dryers which automatically reduce the temperature of these dryers lower than that carried on the balance of the machine, giving the desired advantage of starting the paper over cool dryers and bringing it up to drying temperature gradually. With this installation it is possible to make adjustments quickly and vary the temperatures as may be desired to suit the stock being dried, also adjustments can be quickly made to carry one temperature on the machine or different temperatures on the different sections. The complete system is so arranged that equally good results may be obtained when drying different grades of paper, in other words it will give high efficiency under variable conditions.

The Armstrong Trap, used to illustrate this application, is particularly suited to this service because the trap will not become air-bound, but instead will pass air on through to the discharge header without a waste of steam. It is also very efficient in the drainage of a paper machine dryer by syphon pipes as steam must continually flow to the trap in order that it remain closed, the moment water seals the syphon pipe preventing this flow of steam, the steam in the bucket of the trap will condense and the bucket will sink opening the valve, when the discharge takes place. By the use of a trap on each dryer any difficulties due to the short circuiting of the flow of steam through any section of the dryers are eliminated. Each dryer operates as an individual unit entirely independent of any other dryer in the machine.

The recent development of a thermic unit to be used in connection with traps of this type is another valuable improvement. This unit when applied for draining paper machine dryers holds the trap open so long as it is cold, but immediately releases the trap when it is up to operating temperature. By use of this unit the machine heats up very rapidly when the steam is first turned on, all of the traps blowing straight through and cold air and water are discharged without intereference. But when steam comes to the trap it immediately starts to function as a trap, preventing any discharge of steam, the same as though the trap were not equipped with a thermic unit.

CONTRIBUTION TO THE STUDY OF THE VISCOSITY OF LUBRICATING OILS

The conclusions arrived at by P. Nicolardot and Geo. Beaume, as the result of careful investigations, are as follows:—

1. Barbey's viscosimeter, which is the one in general use in France, yields very satisfactory results, especially at ordinary temperatures, except for very viscous oils, in which case the error may be as high as 8-10%, or for oils with very low viscosity when the temperature is sensibly different from that of the atmosphere.
   If $F =$ the Barbey degrees of an oil, $d =$ its density, and $n =$ its absolute viscosity, then
   $$n = \frac{48.5d}{F}$$
2. Engler's viscosimeter, which is official in Germany, yields much less accurate results. The error may even be over 20%, and it can still be as great as 10%, even when applying Ubbelohde's correction according to the equation
   $$n = 0.01d\,(7.32E - 6.32\ E)$$
   Where $E =$ Engler degrees If E is very large (over 15) this expression practically becomes
   $$n = 0.0732dE$$
2. The relation between Barbey and Engler degrees is as follows:
   $$\frac{4.850}{F} = 7.32E - \frac{6.32}{E}$$
   or if E is large (over 15)
   $$\frac{663}{F} = E$$
4. The method recently brought forward by Dubrisay is unreliable on account of the error due to the surface tension and the density of the oil
5 The "rise method" recently perfected by Baume and Masson is useful for measuring very high viscosities, especially at temperatures below 0°C.
6. The "ball method" has given satisfactory results with the apparatus devised by Aubert and de Laroche.
7. The very simple contrivance recently studied by Baume and Erckmann can render valuable services for liquids having very high viscosities.

The authors hope to undertake a similar study on the Redwood and Saybolt viscosimeters in the near future.

(Translated for Pulp & Paper by A. P. Couture from Chimie & Industrie, Vol. 1, No. 3, Aug. 1918.)

WHO WANTS 'EM?

You can buy parts after the accident, but—
The eyes won't see.
The fingers won't feel.
The legs won't run.
Be careful of those you have.

NEWSPAPER PUBLISHERS CONVENTION

The American Newspaper Publishers' Association and the Associated Press held their annual meetings at the Waldorf-Astoria Hotel last week. Distinguished guests, among them President Harding, Senator George W. Pepper, Senator W. E. Borah and Postmaster General Harry S. New, addressed the gatherings.

The publishers' convention was opened by Paul Patterson, publisher of the Baltimore Sun, with an address as president of the association. Mr. Patterson reported that the publishers had met successfully a difficult newsprint situation last summer and that conditions are much improved. Last summer's shortage was caused, he said, by the greatly increased consumption of newsprint which entailed a sharp advance in prices. A campaign conducted by the association's conservation committee was effective in restricting the amount of newsprint used by publishers and resulted in a price decline to normal levels.

A resolution was adopted declaring as the sense of the membership that the term "standard newsprint paper" as placed upon the free list in the Federal tariff act of 1922 "can be defined as newsprint paper used in the manufacture of standard newspapers." The resolution directed the committee on Federal laws "to urge upon the Federal Treasury Department and collectors and appraisers at several ports the adoption of this definition in the interpretation of the tariff laws."

Alluding to the campaign of the committee on Federal laws against the imposition of a duty on sulphite pulp, Mr. Patterson asserted that able support was obtained from the sub-committees organized in each state, and the proposed tariff was prevented.

A particularly active year by the association's traffic committee was indicated in Mr. Patterson's report. "Traffic conditions on the railroads," he said, "became acute in the fall. Many manufacturers were reporting shortage of cars. In certain sections embargoes on certain classes of freight were established. The traffic committee has dealt most effectively with both situations. It has kept in active touch with the various mills, and by keeping the railroads constantly and fully informed as to the pressing needs of adequate car supply has managed to relieve all pressing cases of car shortage. The traffic committee also was very active in relieving newsprint shipments from various embargoes and restrictions."

All of one session was devoted to a discussion of labor problems, with particular emphasis on the question to what extent the association should commit itself to the pecuniary maintenance of schools for the training of printers to counteract the admitted shortage in that craft. A resolution placed the convention on record as favoring the support and development of regional schools of this sort. The resolution provided that such schools be supported primarily by the newspapers "in such designated territories by plans of assessment to be devised by the newspapers within such regions."

The principle of the sympathetic strike in labor disputes, insofar as it affects relations between newspapers publishers and printing unions, was condemned and rejected in a resolution adopted at the closing session of the convention. The association re-affirmed its stand with regard to arbitration with the International Typographical Union, voting to refuse to renew arbitration contracts unless the union will agree to arbitrate all matters concerned in contracts with the publishers. This is the same position the publishers have taken for the last two years. The union has been willing to arbitrate questions of scale and wage conditions, but has refused to arbitrate questions affecting union rules as embodied in its international law.

The following officers were elected for the ensuing year: President, Paul Patterson, Baltimore *Sun*; Vice-President, S. E. Thomason, Chicago *Tribune*; Secretary, John Stewart Bryan, Richmond *News Leader* Treasurer, Howard Davis New York *Tribune*.

Frank B. Noyes of the Washington *Star* was chosen to the presidency of the Associated Press for another term.

Book Reviews

THE OUTLINE OF SCIENCE. A Plain Story Simply Told. Fourth Volume, Edited by Professor J. Arthur Thomson, Regins Professor of Natural History in the University of Aberdeen. Publishers, G. P. Putman's Sons, New York and London. Price, $3.75.

This work gives the intelligent student-citizen otherwise called "The man in the street" a bunch of intellectural keys by which to open doors which have been shut to him, partly because he got no glimpse of the treasures behind the doors, and partly because the portals were made forbidding by the unnecessary display of technicalities.

It is difficult to see what the expert can object to and yet the text is so simple and clear that the general reader, who has no time for special study, can understand it.

The name of the editor is a guarantee that the work is accurate and fascinating. The reader's sense of wonder is appealed to successfully on every page.

The hope is that the four volumes (containing 800 beautiful as well as useful illustrations and a large number of colored plates) will be given a place of honor and daily use in thousands of families and in all public libraries.

What splendid material, skilfully arranged for the growing minds. Here we have a bird's eye view of the whole amazing story of science and its accomplishments.

The final chapter, "Science And Modern Thought," by Professor Thomson, is a splendid, brilliant summing up and in the latter paragraphs he wisely points out that all the sciences, including mathematics, sprang from concrete experience of practical problems, and most theoretical investigations have made the biggest differences in man's every-day life of today. Wireless telegraphy, the telephone, aeroplanes, radium, antiseptics, antitoxins, spectrum analysis and X-rays were all discovered in the course of abstractly scientific researches. "If" he adds "the utilitarian criterion is pressed in a short-sighted way, that, as to results, defeats itself. The old discouragement expressed in the saying that increase of knowledge is increase of sorrow has been replaced by a more robust confidence in what science may achieve in the control of life. The modern outlook is expressed in Herbert Spencer's pithy sentence: 'Science is for Life not Life for Science', or in Comte's well known saying: 'Knowledge is Foresight and Foresight is Power'."

Order from Pulp & Paper Magazine, Gardenvale Que.

FISCAL YEAR ENDS WELL

Export of Pulp & Paper greatly increased

The regular report issued by the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for the month of March. The total value of these exports last month amounted to $13,952,246 which was an increase of $3,968,568 or nearly 40 per cent over the previous month and also a considerable increase over the figures for March, 1922.

Details for March 1923 and 1922 are as follows:—

	MARCH, 1922		MARCH 1923	
	Cwts.	Value	Cwts.	Value
Paper				
Newsprint	1,903,913	$6,793,128	2,268,998	$8,609,766
Book Paper	86	1,114	5,826	37,767
Other Paper & Mfr.		663,656		896,486
		7,457,898		9,544,019
Pulp				
Sulphate	288,306	902,254	305,229	994,428
Sulphate bl.	196,846	920,790	344,818	1,522,479
Sulphite unbleached	299,767	828,453	442,309	1,168,226
Mechanical	390,506	562,937	410,682	723,094
	1,175,425	$3,214,434	1,503,038,	$4,408,227

Newsprint exports in March broke all previous records when they reached 113,450 tons, crossing over the 100,000 tons line for the first time; the previous high figure having been reached in March 1922 with 95,196 tons. Exports of chemical pulp also made a new high figure with 54,618 tons exported compared with a previous high record of 53,670 tons in June 1920. The total value of the exports of pulp and paper was the highest recorded since December 1920.

The distribution of the March exports was as under:

	Paper	Pulp	Total
U. S. A.	$8,720,924	$4,175,288	$12,896,212
United Kingdom	202,803	55,505	258,308
All other	620,292	117,434	797,726
	9,544,019	4,408,227	13,952,246

Our exports of pulpwood amounted to 113,493 cords valued at $983,436.

The Canadian fiscal year ends on March 31st, and we can therefore make a comparison between the year just closed and the previous year 1921-22. Considerable increases in exports were shown, both in values and quantities, over the preceding year, demonstrating the good recovery made by the pulp and paper industry during 1922.

Details are given in the following tables:—

	Fiscal year 1922		Fiscal year 1923	
	Cwts.	Value	Cwts.	Value
Paper				
Newsprint	15,138,327	$64,635,627	20,130,455	$72,667,826
Book-paper	17,362	201,764	43,626	298,596
Other paper & Mfrs. ...		4,696,027		6,601,519
Pulp				
Sulphate	2,377,556	$ 7,906,872	2,961,275	$ 9,262,393
Sulphite bld.	1,859,501	8,325,617	3,182,625	13,073,289
Sulphite unbl.	2,861,470	9,236,296	4,459,028	11,098,374
Mechanical	5,336,710	10,456,092	6,385,895	9,552,892
	12,435,237	$35,924,877	16,988,823	$42,986,948
Total pulp & paper		$105,458,295		$12,554,889

Thus in the fiscal year just closed our exports of newsprint increased by 33 per cent over the previous year and reached over 1 million tons, exports of book paper were more than two-and-a-half times greater, exports of sulphate pulp increased by 24 per cent, exports of sulphite pulp increased by 61 per cent, and mechanical pulp by nearly 20 per cent.

Pulpwood exports for the fiscal year were also considerably above those for the previous year being 1,096,462 cords, valued at $10,755,655 compared with 825,967 cords valued at $9,879,150 for the year 1921-22.

EQUIPMENT ABSORPTION STATISTICS TO BE GATHERED

Chemical Equipment Association Institutes Long-needed Monthly Survey of Employment of Chemical Equipment and Materials, by Industries and Sections.

Statistics, the need of which not only the chemical industry but general industry throughout the country has long felt, are now being gathered through the co-operative efforts of members of the Chemical Equipment Association.

The membership of the Chemical Equipment Association, manufacturing the entire range of chemical equipment and materials employed internationally in such great industries as the manufacture of heavy and fine chemicals, of coal products, fertilizers, dyes, electro-chemical and electro-metallurgical products, the ferrous and non-ferrous metallurgical fields, the petroleum, ceramics, paper, rubber, paint, leather, lime, soap, and sugar fields, in the manufacture of edible and essential oils, in the great range food and animal products activity and in still other of the world's key industries, are in a uniquely strategic relationship to general business.

Equipment a Barometer

According to a statement made by Pierce D. Schenck, president of the Association, following a recent consideration of statistical activities by the board of directors: "Chemical equipment is in effect a barometric register of general industrials conditions both at home and abroad. In many ways, the absorption of chemical equipment and materials is as reliable and specialized an index to general industrials conditions as the production of pig iron was considered to be before the war, or as the Federal Reserve Bank's discount rates are now regarded."

FIRE LOSSES

In Canada are estimated for the week ending February 28th, 1923 at $2,251,200, $1,391,200 more than for the same week in 1922. This is appalling and should be a constant reminder to us to take no chances with fire hazards.

THE WOODLANDS SECTION

FOREST PROTECTION

(Editorial in, "THE GAZETTE," Montreal, April 18th, 1923.)

Canadian forests will this year be visited by a large number of delegates from all parts of the British Empire, embracing in their number well-known timber men of knowledge and experience who have been associated with the administration and management of the forests of the various parts of the Mother Country and the Dominions. Mr. Frank J. D. Barnjum, the Maritime Provinces lumber man and forestry conservation philanthropist, who has for many years conducted vigorous patriotic campaigns in the interests of the preservation of Canadian forests and who has spent time and money liberally in the pursuit of his schemes, is again to the fore in a project to stir up action in parliament, feeling, as he himself puts it, that forestry conservation "is one of the most vital problems facing this country today." Mr. Barnjum has offered thousands of dollars—not once, but several times—in prizes for suggestions as to how best to conserve the forests; preserve the trees from the ravages of the budworm and other harmful insects; and also prohibit the export of unmanufactured wood. Mr. Barnjum has recently addressed a personal letter to the Federal and provincial members of parliament, emphasizing the obvious necessity for immediate action, more particularly in the latter aspect of the problem.

Sir Lomer Gouin imposed salutary restrictions in the Province of Quebec covering practically 85% of the timber lands of the province which constitute the foundation of our pulp and paper industry, although there is no valid reason why the remaining 15% should not be equally well protected. Every new paper machine installed in Canada and every new issue of pulp and paper securities brought out and sold to the people of the Dominion are added arguments, it is urged, for prohibiting the export of raw wood. Close observers of the Canadian forestry protection problem are agreed that only have we not a sufficient supply of wood for the mills at present operating, but we are also suffering positive and serious ills because we have already denuded our forest areas to too great an extent. Emergency measures, to be followed by reduction of the "cut" on all lands, both public and private, are forcibly stressed—to the amount of the annual growth. China, at one time rich in wooded lands, was overtaken by disaster through what is precisely occuring in this country today, and unless strong measures are taken—and that speedily—to conserve the timber crops of this Dominion, Canada will find herself similarly placed. In her forests Canada has a tremendous natural asset and one which, in spite of all the depredations of past years can, by taking proper steps, be yet saved. God alone can make a tree. The virgin forests of the United States once covered well towards a billion acres—822,000,000 acres—over a million square miles, a tract, if all the trees were put together, 500 miles by 2,000 miles. There remain 137,000,000 acres, just one-sixth of the original acreage. Towns and farms have filled nearly half of the cleared spaces—359,000,000 acres and second growth, much of it of an inferior quality, covers nearly a third—245,000,000 acres. The rest—81,000,000 acres—is idle land, devastated and growing nothing worth while.

The Supreme Maker of trees can do something, but He needs man's assistance; He can give the increase provided Pauls plant and Apolloses water and entomologists protect against pests, and fire wardens protect against fire, with the plant pathologists, and soil physicists. There must be systematic planting of trees, the great advantage of which was fully demonstrated in Scotland during the late war, when thousands of acres of magnificient Scots' pines were available for the construction of railway ties and other necessary work in France and Belgium. This area had been denuded of trees to furnish material during Napoleonic wars. It was replanted, and the result was the forest of Glenmore sprang up again as vigorous as ever and supplied the trees for use against the Germans. Farmers might well put all their uncultivated land into timber cultivation and conserve their bush acres by removing dead and fallen trees, and otherwise put to practical use the knowledge of forestry they have acquired. More and more should Canadians adopt all available measures for forest protection, insect and disease control, and by cutting timber in such a way as to provide for renewed growth. Until the practice becomes general and Canadians are as careful to avoid injuries to a forest crop as they would be to a wheatfield—and have the reverence for a tree the poets sing about, we shall always be up against the "forest and timber conservation problem." Members of parliament should try to recognize that this forestry problem is an agricultural problem. Timber is a crop. Mr. Barnjum's letter is concise and is worthy of careful and serious perusal by our legislators, who would do well to heed its suggestions, the adoption of which might go a long way towards increasing the wealth of the timber crop. The older wooded countries regulate the tree resources and see to it that their capital stock remains intact by cutting only the annual increment. If Canadians use up their wooded capital, the only alternative must be a forestial bankruptcy.

BUY BIG TIMBERLAND TRACT

The Eastern Pulpwood Company has acquired from the James Murchie Land Company, a tract of 57,000 acres of land on the St. Croix River. This is declared to be the largest timberland sale made by the Maine owners in several years. These lands, most of which are in Washington county, have been cut during recent years by the Eastern Pulpwood Company and the St. Croix Paper Company on stumpage rights. The Eastern Pulpwood Company has also made arrangements to purchase the Murchie interests the land in Calais between the Ferry Point bridge and the railroad bridge and will occupy the Murchie office building.

MARITIME FORESTS ARE NOW DEPLETED

The annual report of the Department of Crown Lands of Nova Scotia was recently submitted to the legislature. The net surplus for the last fiscal year was $33,453.45. Against the total receipts of $41,341.21 is charged $7,887.76 for salaries, surveys, refunds and other expenses.

In a recent editorial a Halifax paper says that there is apparently little to do now except express regret that provincial administrations during the last fifty years have practically wiped out the timber estate of the province as an asset of value and a revenue producer. If the interests of the people had been served, it adds, the timber areas would now be competing with the coal areas of Nova Scotia for first place as a provider of revenue. Notwithstanding the teaching of history, the warnings of far-sighted men and the suggestions which must have at times appealed to the successive governments of the province, improvident methods prevailed and bit by bit the asset of the people was given away until there is practically nothing remaining. The climax of the whole matter was reached last year when an announcement was made that the remaining Crown Lands were withdrawn for either lease or sale. It seems, however, that what Crown Lands remain are of no use either for settlement or lumbering.

The paper concludes,—"This is a lamentable story of the dissapation of one of the splendid heritages of the people of Nova Scotia, and nothing is being done to replace it."

UNITED STATES FORESTRY NOTES

According to the representatives of one of Maine's large paper manufacturing companies, there are now more native Maine men in the lumber camps of that State than has been the case at any previous time in the last ten years. Better pay and shorter hours in other callings drew many Maine men away from the woods a President, S. E. Thomason, Chicago Tribune; Secretary. few years ago. Their places were taken by immigrants from northern Europe,-- Russians, Finns, Swedes and Norwegians for the most part. Now these foreigners are leaving. There has been a steady exudus of them for several years, and at present the woods are pretty well stripped of them.

Under a co-operative plan, the campaign for the extermination of the gypsy moth as a menace to fruit, shade and forest trees of New York State will soon be launched by that State's Conservation Commission with the assistance of the United States Department of Agriculture.

"We plan to work ahead of the moth," said Commissioner MacDonald, "and prevent its advance until it can be exterminated with the assistance of the parasites that prey upon it.

President Harding's proclamation for a week of forest protection preaching and practical work is meeting with a favorable reaction. Representative Martin L. Davey of Ohio has a program of legislation of "practical value" in this campaign. In a letter to Senator McNary, chairman of the Senate committee on reforestation, he suggests that the Government buy up vast tracts of cheap waste land now available and embark upon a "wholesale program of reforestation." He further suggests that taxes be eliminated from growing timber lands as far as possible and that the land about headwaters of all important streams be reforested without regard to its value for other purposes. All lumbering from now on should be placed under the control of the United States Forest Service, Mr. Davey urges. "There should be levied by the Federal Government a tax of some reasonable amount to every thousand feet of lumber cut from now on. Every dollar of this money should be turned into reforestation and measures of conservation. The Federal Government should eliminate all taxes from growing timber lands; and it should urge every State to lift the taxes from such lands."

During the last four years the Army Air Service has maintained an extensive and successful fire patrol over the heavily timbered regions of California and Oregon, says the United States Army *Recruiting News*. A total of 458 fires was discovered, of which number it is estimated that approximately 114 were first discovered by airplanes. The fires were located with an average accuracy of 95 per cent. There was an average of nine officers and twenty-eight enlisted men on duty and ten airplanes in commission. The total area observed was about 2,153,370 square miles; the total number of miles flown 36,121 and actual flying time 36 hours. It is roughly estimated that the value of the timber in this area amounts to one-half billion dollars. Lack of funds has caused the army to withdraw its planes from the fire patrol system, which it is estimated has saved many millions of dollars.

WATERPROOFED BOARD

Owing to the increase in cost and lower quality of lumber now obtainable, there is a strong incentive to use the inferior woods and waste papers to make products that will replace the ordinary wooden products with which we are familiar. For example, pasted paper products are used extensively as boxes to replace the ordinary wooden box. Paper barrels are now made, by special machinery, by winding up and pasting a roll of paper into suitable cylindrical shapes and attaching heads to them. Paper pails are made by pressing wet pulp into a solid pail, or by winding the paper into a pail while pasting it together. Pulp products are now made, in the shape of a board, which are fairly water resistant and very light in weight, and these are very useful.

Because of the improvements in methods of waterproofing paper, by treating it before it is formed on the machine, and also the development of special organic products for pasting it together, which will become insoluble on drying, it may be said that the problem of making a thoroughly waterproof board has already been solved and merely awaits the application of these processes which are now perfected. With regard to the properties of this new board product, it should be possible to make it sufficiently waterproof so that it will not absorb 20 per cent. of moisture after several hours' immersion in water.

—The Paper Container.

The Crane paper mills at Dalton, Mass. are now under direction of Winthrop Murray Crane, son of the late Senator Crane. Mr. Crane is 43 years old. He was educated at Yale University. After graduation from that institution, he donned overalls and went to work in a paper mill for $15 a week. Frederick Goodrich Crane, Jr., a cousin, will be associated with Mr. Crane in the management of the Dalton mills.

Mr. Barnjum says: — Sweden, Norway and Finland, outside of the United States, are Canada's chief competitors for the world's trade in pulp and paper. None of these countries permits the exportation of raw pulpwood. Why should Canada?

INSTITUTE ITEMS

WHAT THEY SAY OF OUR SCHOOL

(From THE STANDARD, Watertown, N. Y.)

One of the most interesting examples of industrial education is now being carried on by the pulp and paper industry of this continent.

For a number of years about 100 of the best technologists of this industry have been engaged in the preparation of a set of authoritative text and reference books, to cover every phase of pulp and paper making especially fitted for correspondence study.

T. Linsey Crossley, who is a member of the Joint Executive committee on vocational education of the pulp and paper industry in the United States and Canada is now visiting the mills in this part of the state in order to introduce the courses based on the text books of the committee. He will also take applications for scholarships in the institute of Industrial Arts which is the organized school authorized by the industry, functioning now for some months. He has already an enrollment of over 250 students holding positions from manager down to laborer.

The course of study covers all the essential mathematical and science subjects, beginning with elementary arithmetic, and proceeding through every phase of manufacture.

The teaching staff of this school of industry is unique in that it consists of men holding important positions in mills throughout the continent who by the consent of their employers undertake to act as instructors in the particular department in which they have had special experience.

This arrangement and the fact that the industry in the United States and Canada has invested $50,000 in the preparation of the five volumes of reference textbooks, makes it possible to carry on an exceptionally high grade school with very low priced courses.

It is believed that in this manner the pulp and paper industry offers unusual opportunities for ambitious young men and also that the co-operation necessary for more economic production as between, administrative, technical and operating staffs, will in this manner be brought about.

The Plant and Picturesque Surroundings of Pacific Mills, Ltd., Ocean Falls, B. C., where the Institute has a large number of students. This picture was taken from a nearby mountain, and shows: 1, Japanese town, 2. Club and tennis courts, 3. Steamship landing. 4. Hotel, 5. General store, 6. Paper mills and freight wharf, 7. Amusement ball (above), 8. Pulp mills, 9. Dam (above), 10. Steam plant, 11. Saw mills.

SAVING OF WASTE IN PAPER MILLS

That waste in the paper industry can be avoided with an actual profit to the mill was indicated by the report of the Committee on Waste to the Technical Association of the Pulp and Paper Industry today, particularly in the case of thousands of gallons of what is known to the paper men as white water.

This white water, containing infinitely small bits of pulp can be saved by using this water over again in the mill processes. It requires 7,000 gallons of water to make every 100 pounds of paper, and one important recommendation for the saving of waste is the reusing of the water which has gone through the machines. The committee on waste declares that in most cases the reuse of white water saves power, with little or no increase of equipment, and at the same time a material carried in the white water.

The use of screens and sedimentation tanks separately or in combination, is advocated, and the committee urges that definite tests be made to determine the amount of material carried in the waste water, as a means of finding the extent of the saving that may be effected. Some estimates are that 10 per cent of raw material can be saved by adequate equipment, but this is probably in excess of the facts.

Technical Section

REVIEW OF RECENT LITERATURE

A.—Properties and Analysis of Raw Material and Products

A—1. The Quantitative Composition of Coniferous Woods. Astrid Cleve v. Euler. **Celluloschemie,** 4, 1-11 (Feb. 11, 1923. As a result of several investigations it has been established that the lignin content of woods is not constant but varies within rather wide limits. The controlling factors are the age of the tree, the climate and conditions of growth, and the section of the tree tested. As an aid in determining the true lignin value the following definition is offered. Wood proper, chemically considered, consists of the carbohydrates of the cell walls, insoluble incrustations or lignin substances of a tannin nature which are mixed with the carbohydrates, soluble tannin substances related to lignin, and dyes or their leuco compounds which appear in the cell wall and bear a certain relationship to lignin. The mineral constituents (represented by the ash), wood protein, fat and turpentine are not included as a part of wood proper. Evidence is given for alcohol-soluble lignin and considerable space is devoted to the nature of the rosin extract. The best procedure to follow in the extraction of coniferous wood is first a 10 hour extraction with benzol, followed by 30 hr. with 96 per cent. alcohol at boiling temperature in a Soxhlet or similar apparatus. Separate extractions are better than a benzol-alcohol mixture. Averages of 9 tests on Swedish coniferous woods gave 4.15 per cent benzol-rosin and 3.63 per cent alcohol (lignin)-rosin. To obtain true lignin values from empirical ones, as given by the Willstatter-Zechmeister 41 per cent hydrochloric acid method or the Klason-Becker 72 per cent sulphuric acid method, the following corrections should be applied: (1) the residue obtained by weighing calculated in per cent of the dry wood should be increased 2 units to compensate for loss of acetyl, (2) if the sulphuric acid method was used the resulting value should be decreased by 5.7 units which corresponds to 4.0 per cent sulphur taken up from the acid; (3) the so-corrected value should be adjusted to ash- and protein-free wood (ash and protein amount to about 1 per cent), also to rosin-free wood as given by the benzol extraction and finally to wood dried to 102 deg. C.; (4) to the previously corrected lignin value the amount of lignin-rosin extracted with alcohol (after a previous extraction with benzol), based on fat,-protein-and ash-free wood, should be added. This figure, then, represents the true lignin value for pure, dry wood. The following corrected true values are given (average of 9 analyses of spruce and pine) for Swedish woods: total lignin 28.4 per cent, carbohydrates 71.6 per cent. Data are given comparing the results of Klason and of Oman with those of the author. — J. L. P.

A-4. The Reddening of Sulphite Pulp. H. E. Wahlberg. **Svensk Pappers-Tid.** Translation in **Paper Trade J.** 76, No. 6, 53 (Feb. 8, 1923). The reddening of sulphite pulp is caused by the oxidation of impurities in the pulp, such as ferrous salts and organic substances which give red ferric compounds. The reaction takes place especially in a moist atmosphere or in the presence of oxidizing agents, such as bleach liquor, and is accelerated by small quantities of copper salts in the pulp. The color can be avoided by the use of a cooking acid as free as possible from iron salts. The red color can be removed by washing the pulp with water acidulated with sulphurous acid.—A. P.-C.

A-4. The Composition of Chemical Pulps of Various Origins. Julien, Becker & Co. **Papeterie, 45,117 (Feb.** 10, 1923). Analyses are given of (1) bleached Austrian sulphite, (2) No. 1 strong German sulphite, (3) No. 2 strong German sulphite, (3) No. 2 strong German sulphite, (4) "St. Lawrence" Canadian easy-bleaching. sulphite, (5) "St. Lawrence" Canadian hard sulphite, (6) Canadian "Ha Ha Bay" sulphite, (7) unbleached Scandinavian sulphite, (8) unbleached Scandinavian soda pulp.

Pulp	Baryta Number	Alpha-cellose per cent	per cent Resins	Lignin per cent	Cl consumption No.	Ash per cent
1	1.5	....	0.288	84.54	82.91	.....
2	55.5	5.52	0.506	87.83	84.86	0.730
3	62.5	5.79	.....	87.43	85.76	0.712
4	24.2	4.37	0.658	86.88	84.92	0.518
5	75.5	...	.....	.....	.....	0.605
6	51.0	....	.....	.....	.....	0.480
7	47.0	....	0.882	.....	.....	0.867
8	....	4.85	0.102	90.03	96.33	0.732

All determinations were carried out on bone-dry pulp, with the exception of ash, which was determined on air-dry pulp. Lignin was determined by Becker's 72 per cent sulphuric acid method, resin (including fats and waxes) by extraction with ether, alpha-cellulose by means of 17.5 per cent caustic soda solution, baryta number by the Schwalbe-Sieber method, and chlorine consumption by a modification of Sieber's method (details not given). — A. P.-C.

A-15. High Spots in the Chemistry of Cellulose. Gustavus J. Esselen, Jr. **Ind. Eng. Chem.,** 15, 306-308 (March 1923). Brief notes on a few of the more interesting of the recent developments in cellulose chemistry. — A. P. C.

D—Groundwood Manufacturing and Equipment

D-4. The Breaking of Wood Grinding Stones. Paper Ind. 4, 1659-1660 (March 1923). An outline of the various causes of breaking of grinder stones, more particularly at the corners, and of the methods of avoiding these breaks.—A. P.-C.

D-4. Grinding Stone for Wood Grinder. Gottlieb Hohmann. Ger. patent 358,568. **Wochbl. Papierfabr.** 54, 171 (Jan. 20, 1923).—J. L. P.

D-0. Seventy-Five Years of the Wood Pulp Industry. L. Moser. **Wochbl. Papierfabr.** 54, 101-103 (Jan. 13, 1923). A brief account of the development of the mechanical wood pulp industry in Germany. — J. L. P.

E—Sulphite Process and Equipment

E-2. Process for the Recovery of Sulphur from Waste Sulphite Liquor. Anton D. Seppe and Otto Zeitschel. Ger. patent 366,714. **Papierfabr.** 21, 68 (Feb. 4, 1923). The evaporated dry waste liquor is treated with dry hydroxides, oxides or carbonates of the alkali elements and a small quantity of water and then heated to 150 300 deg. C. The lignin is subsequently precipitated with an acid.—J. L. P.

E-5. Chemistry of the Sulphite Process, II. Chemical Properties of Pulps Prepared by Indirect Cooking. Mark W. Bray and T. M. Andrews, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 3, 49-52 (Jan. 18, 1923). With all conditions constant except time, a series of spruce pulps was prepared by indirect cooking (for conditions of cooking see **Paper Trade J.** 20, 591, 1922). These pulps were compared with commercial pulps made under similar conditions. It has been found possible to compare such pulps by taking into consideration the cellulose content. A high cellulose content appears necessary to produce good pulp. The percentages of stable and unstable celluloses are an indication of the quality of the pulp, the pulp with the greater amount of stable cellulose usually being of superior quality. The pulp deteriorates with the overcooking necessary to remove all the lignin.Until the ninth hour of cooking the cellulose and lignin contents of the pulp are very nearly the same as those of the wood. The first few hours do not affect the alkali-soluble material. In the latter part of the cook a larger amount of this material is removed. While the character of the cellulose and lignin content is indicative of the quality of the pulp produced, other factors not well understood appear to exert considerable influence. Cellulose is always lost during the removal of lignin, and it seems 45 per cent. is about the maximum yield of cellulose by present commercial methods of sulphite cooking. — A. P.-C.

E-5. Chemistry of the Sulphite Process, III. Reactions of the Calcium Base. R. N. Miller and W. H. Swanson, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 9, 49-51 (March 1, 1923). A report of an investigation into the disappearance of calcium during sulphite cooking, with observations on the effect of variable conditions on the pulp produced. The decrease at the end of the cook amounts to as much as 50 per cent. (and over) of the total amount of base originally present in the liquor, the decrease depending on cooking conditions. Both the rate of disappearance of the base and the rate of exhaustion of the bisulphite is greater in the case of the drier wood; but the rate of combination of the base with the organic matter of the wood does not show great variations. The base missing from the liquor is localized around the fibers in some way, at least partially in the form of calcium monosulphite. The greater the moisture content of the wood, the less the amount of lime localized on the fibers. With slow temperature rises the disappearance of lime is greatly reduced. The rate of disappearance does not depend on the acid strength. All other conditions being equal, the wood of high moisture content will give a larger yield of better pulp.—A. P.-C.

E-5. Chemistry of the Sulphite Process, IV. Distribution of Sulphur During Cooking. R. N. Miller and W. H. Swanson, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 10, 51-54 (March 8, 1923). A series of semi-commercial indirect cooks were made, and the following determinations were made on samples of liquor from the digester: total sulphur dioxide by a method developed by the authors (run 2 cc. of liquor into 1 cc. of 15 per cent. caustic soda solution, half fill the crucible with sulphur-free Eschka mixture, dry at 100 deg. C., heat while passing a stream of oxygen through, absorb the gases in 5 cc. of 15 per cent. caustic soda solution, and then proceed as in the determination of sulphur in coal by the Eschka method), total inorganic sulphur dioxide by iodine titration, combined sulphur dioxide by Sander's method, loosely combined sulphur dioxide by Klason's method, and sulphate by Sherrard and Blanco's method. Total sulphur dioxide are in combination as calcium bisulphite the sulphur dioxide; but if it is assumed that the missing base (see preceding abstract) and the missing sulphur dioxide are in combination as calcium bisulhpite, and the sulphur dioxide equivalent to the missing base calculated and added to the sulphur dioxide found, the total sulphur dioxide thus found at the end of the cooks is practically equivalent to the total sulphur dioxide introduced into the digester. The results clearly show that the digester contents during the cook are not homogeneous, that there is a concentration of chemical in chips. Loosely combined sulphur dioxide contributes little to the knowledge of the reactions going on in the digester. No appreciable quantity of sulphate is formed until near the end of the cook; the formation of sulphate does not appear to be governed by the temperature but rather by the concentration of free sulphur dioxide. A study of the results seems to show that the reactions taking place in the digester are subject to numerous variations and any attempt to set down a quantity as the correct value for sulphur consumption per ton of pulp is fruitless. Cooks made with kiln dried wood showed lower lignin removal per pound of organically combined sulphur. The reactions involving the combination of the base and sulphur with organic matter seem more or less independent of the reactions which govern the quality of the pulp.—A. P.-C.

E-5. Preliminary Treatment of Cellulosic Raw Material for the Production of Cellulose. Erik L. Rinman. Ger. patent 366,701. **Papierfabr.** 21, 58 (Jan. 28, 1923). The raw material, before treatment with cooking liquor, is soaked in warm water or warm dilute waste liquor at 80 deg. to 90 deg. C. The liquid is removed before the cooking liquid is added; an increased yield is claimed.—J. L. P.

E-5. Process for Filling Digesters with Warm Sulphite Cooking Acid. Zellstoffabrik Waldhof and Hans Clemm. Ger. patent 363,999. **Wochbl. Papierfabr.** 54, 396 (Feb. 10, 1923). J. L. P.

E.-0, F.-0. Removal of Resin, Fat, Wax, etc., from Plant Materials, Especially Wood and Wood Pulps. C. G. Schwalbe. Ger. patent 366,205. **Papierfabr.** 21, 28-29 (Jan. 14, 1923). The process consists in subjecting not only the extraction liquid but also the materials to be extracted to a continuous or intermittent motion, accomplished by rollers or similar devices which also expose fresh surfaces of the material to the solvent.—J. L. P.

E-0, F-0. Process of Making Pulp. F. K. Fish, Jr. Can. patent 225,538, Oct. 31, 1922. The chips are first steamed in an atmosphere containing more or less of the volatile extractive matter from the wood then treated with a superheated solution (at about 245 deg. F. of the water soluble extractive matter of the wood. The pressure is relieved as rapidly as possible, the material is subjected to a vacuum, and it is than subjected to a mild treatment with a suitable chemical solution for a short time and then washed, first with hot water under pressure. The liquor used for the chemical treatment can be used repeatedly.—A. P.-C.

UNITED STATES NOTES

A demand for a 10 per cent increase in wages and the elimination of Saturday night and Sunday work together with a guarantee of four days' work a week for skilled help during slack periods will be presented to the manufacturers by the Eagle Lodge of Papermakers of Holyoke, Mass., at a conference to be held at an early date. The outcome of this conference will be watched closely by other unions as it is figured that if the skilled help get their advance, increases will be asked for by the steam engineers, millwrights and other trades connected with the industry.

Leading paper companies of Kalamazoo have voluntarily raised the pay of their employes. Wages of male employes were increased 5 cents an hour as those of women workers 3 cents an hour. This advance, which was made effective as soon as announced, aggregates over $10,000 each week or between $525, and $550,000 a year.

S. L. Wilson, acting president of the American Writing Paper Company, has been elected president to succeed George H. Galliver, resigned. Dr. Ralph E. Rindfuzz, secretary and director of the corporation, and R. R. Campbell, vice-president and production manager, have tendered their resignations to Mr. Wilson. Mr. Campbell, has been with the American Writing Paper Company since 1918. He has not announced his plan for the future.

On the recommendation of Secretary of Commerce Hoover, Georges K. Burgess has been appointed Director of the United States Bureau of Standards. Mr. Burgess has been Chief Physicist of the bureau. He succeeds Dr. S. W. Stratton, who resigned several months ago to become President of the Massachusetts Institute of Technology.

Sustaining a protest of G. W. McNear, Inc., of San Francisco, the General Customs Appraisers find that imported strawboard, made principally or wholly from straw, assessed at 25 per cent ad valorem, as "writing paper," under the Tariff Act of 1913, should have been assessed at but 5 per cent.

Articles of incorporation have been filed with the Secretary of State, Michigan by Irving Hopper, his wife Elnora Lee Hopper, and R. C. Goemble, attorney, as incorporators of the El-Nora Lee Paper Company of Kalamazoo. The new enterprise is capitalized at $600,000. Kraft and book papers will be the principal product. Mr. Hopper was formerly general superintendent of the Kalamazoo Stationary Company. The Hopper property at Howlandsburg, about three miles north of Galesburg, is to be the site of the company's plant.

A new collar for paper machines, the invention of George F. Lentz, an employe, has been put in use by the Hoberg Paper Company, Green Bay Wisconsin. The new collar is an improvement over the old set screw type and can be used on any type of paper machine. It does not mar or scratch the shaft and is easily adjustable.

Information obtained through the paper questionnaire sent to all parts of the world by the Paper Division of the Department of Commerce is being tabulated by John Matthews, jr., chief of the division, and will be made available at an early date. The response to the questionnaire has been most encouraging thus far, according to Mr. Matthews, and it is expected much important data will yet be received.

George L. Henderson has resigned as secretary and treasurer of the Pejepscot Paper Company.

A contribution of $25,000 toward a $350,000 fund to erect a new Y. M. C. A. building in Green Bay, Wis., has been made by Judson G. Rosebush, of the Patton Paper Company and the Northern Paper Mills, Green Bay. The donation by Mr. Rosebush was one of the largest in the drive for funds. He is International President of the Y. M. C. A. Eight or nine years ago he was one of the largest contributors toward the Appleton Y. M. C. A. Building.

G. C. Kennedy, until recently with the Allied Paper Mills sales department in New York, has opened offices at 84 Water Street, that city, where he will represent the Paper Products Company of Swarthmore, Pa. the Erving Paper Mills of Erving, Mass., and the Crescent Paper & Machine Company of Phoenix, N. Y. He will deal in filter papers made in Japan and other specialties.

The Toledo Stationary Manufacturing Company has been acquired by the Kalamazoo Stationary Company, which has made arrangements to handle the Toledo concern's business from its head offices in Kalamazoo.

J. E. Mitchell, J. P. Liddy and A. J. Foley, all of Utica, N. Y., have incorporated the American Toilet Paper Company, with a capital stock of $25,000.

BUD WORM KILLS MORE WOOD THAN IS CUT

That the spruce bud worm is doing more damage to the pulp wood forests of North America than all the cutting by the paper companies was pointed out by C. W. Boyce of the United States Forest Service during the convention of the Woodlands Section of the American Paper an Pulp Association. Quoting Chief Forester Piché of the Province of Quebec as authority for the estimate of the loss of 75,000,000 cords of pulp wood in the last ten years, he said this comes within 50% of the entire amount of wood used by the paper industry of North America since its beginning. It was also pointed out that the heaviest portion of this damage was in the three years ending in 1920. At a minimum estimate of $15 per cord, the financial loss due to this insect would total over a billion dollars. The losses in other portions of the northeastern states and provinces add hundreds of millions of dollars of losses to this huge figure.

PAPER EXPORTS DURING 1922 SHOW

Final figures of United States exports of paper mill products for 1922, amounting to $24,152,567, show a decline in value of $4,877,106, as compared with the 1921 total of $29,029,673, according to a recent report issued by the United States Department of Commerce.

The North Western Railway of India has laid 59 miles of track with a new iron and concrete sleeper the "Stent sleeper", which is fitted with plugs of creosoted wood to which the rails are attached.

PULP AND PAPER NEWS

Mr. H. D. Huff of the Riordon Company and Mr. G. Ruickbiée, manager of the transportation department of the Canadian Pulp and Paper Association attended a convention of the Manufacturers of Three Rivers, Shawinigan Falls and the St. Maurice River Valley held last week at Three Rivers.

April 17th marked the 43rd year of Mr. T. J. Stevenson's connection with the Riordon Company. He commenced this with the Merritton Paper Company, founded by the late John Riordon, which manufactured in those days 8 tons of newsprint and wrapping paper per day, using rags and groundwood. Contrast this with the output of any of our modern mills. Mr. Stevenson has naturally participated in the evolution of Canada's pulp and paper industry, and has witnessed eras of depression and of prosperity. He is by nature an optimist, and looks forward to still greater expansion of the industry.

Mr. W. J. Egan, Canadian Trade Commissioner to South Africa, will be at the offices of the Canadian Pulp and Paper Association at 10 o'clock on the morning of Wednesday May 9, and will be glad to meet any members of the Association who may be interested in extending the pulp and paper trade with South Africa.

A large party of timber cruisers have been at work in the Gatineau district in connection, it is stated, with a pulp and paper scheme, which according to report will be of an extensive character. English capital will be interested.

In connection with the sale by auction of the Quinze River water powers, it may be pointed out that Mr. Alex Fasken of Toronto, who was the successful bidder, is president of the Temiskaming Pulp and Paper Company, Limited, with a groundwood mill at Haileybury, Ont. The capacity is 40 tons per 24 hours.

We understand that Mr. S. A. Ginger, who resigned from the Howard Smith Paper Mills, Limited, Montreal and left for England on April 20, has joined the staff of Becker and Company, Limited, London, England.

Two or three British and American mill supply firms have under consideration the construction of branch factories at Three Rivers, P. Q.

When seen at the head office in Toronto of the Provincial Paper Mills, Limited, S. F. Duncan, Secretary-Treasurer of the company, characterized as rather premature the announcement that the company would build a one million dollar soda mill at Port Arthur in 1924 for the purpose of making woodpulp out of poplar. He admitted, however, that the project was part of the general program of expansion, although as to when it would be put into effect would altogether depend upon what measure of success attended the enterprise recently inaugurated at Port Arthur.

A good sized delegation from the Toronto wholesale and manufacturing stationers is expected to attend the annual convention of the Canadian Booksellers and Stationers' Association which will take place at the Prince George Hotel in Windsor on May 17 and 18.

An office will shortly be opened in North Bay by the forestry branch of the Lands and Forests Department of the Ontario Government with a view to giving better fire protection to the districts which North Bay serves, as well as in assisting general forestry work. The office will be in charge of J. F. Turnbull, B. S. C. F., formerly of Tweed, who has arrived in the town to take over his new duties. The North Bay district will be known as forestry district number 4, and will extend from Mattawa, the boundary of the Pembroke district, to Markstay, where it comes in contact with the Sudbury district. Northwards it will extend to mileage 50 on the T. & N. O. Hitherto the district has been looked after by the Sudbury office.

Rapid progress is being made at Thorold in connecting up the town power and water supply with the Montrose Division of the Provincial Paper Mills, Limited. The work involves the building of a couple of iron bridges for the use and convenience of the mill employees and the improvements include provision for a steady supply of pure water for manufacturing purposes.

The many friends in the paper trade of George Allan, of the Buntin-Reid Company, Limited, Toronto, will regret to learn that he is confined to his room with illness.

The Copp, Clark Co., Limited, Toronto, have prepared a very attractive exhibit of their papeteries, writing papers, envelopes, greeting cards etc., which is on display at their warehouse on Wellington Street, west. A number of new lines are included which are very artistic in design and which have been made for the next Christmas trade.

J. Wilcox, of the Smith Paper Company, Lee, Mass., manufacturers of India and Bible paper, was a business visitor in Toronto last week.

At the regular meeting last week of the Toronto Club of Printing House Craftsmen, A. H. Robson, superintendent of the art department of Rous & Mann, Simcoe Street, gave an illustrated address on "Color and the Munsell Notation System". Among the questions on the order paper which were asked and discussed was one as to why printing showed through on some coated paper and whether it was the fault of the paper or the ink. There was an attendance of nearly a hundred and several new applicants for membership in the club were received.

H. P. Tressidder, who for some years has been the business manager of Printer and Publisher in Toronto, has resigned his position and will join the Hunter, Rose Company's selling force at the beginning of May.

The activities of Premier Drury and his Cabinet as far as the Government's connection with E. W. Backus, the United States lumberman is concerned, are being carefully watched by the Conservative party in the House. Charles McCrea, member for Sudbury, has placed many questions on the order paper, among them being as to the rights, if any, granted to Mr. Backus, or the Fort Frances Pulp & Paper Company, permitting the company to store water or create power on the Seine River. The member also wants to know if the Province has been protected against the possibility of the exploitation of power on the river and an enquiry is made as to whether there is sufficient pulpwood in the area tributary to the Seine, still vested in the Crown, to create a pulp and paper industry. Early answers to the questions have been promised by the Government.

A statement of the work being done by the Government with a view to preventing damage to Canada's forests by insects and fungus outbreaks, was made in the House of Commons last week by the Minister of Agriculture. The Government was fully aware, he said, that considerably more work should be done, and was ever ready to give careful consideration to representations made by of the serious causes of losses to Canadian forest re- the industries concerned in order to assist in the removal sources. Special investigation had been made in regard to the dying balsam and spruce in Eastern Canada, and a scheme of co-operation is contemplated between the owners of some timber limits and the Division of Botany, whereby the services of trained forest pathologists will be available for the study of various diseases affecting balsam and spruce in the Eastern districts.

John Ebbells, of the American Writing Paper Company, Holyoke, Mass., was a caller on the Toronto paper trade last week.

Mr. Jones, Manager of the Kapuskasing mill of the Spruce Falls Company, was a business visitor in Toronto last week.

The same mail brought two samples of coated paper, one from Buntin, Reid & Co., Toronto and the other from Valleyfield Coated Paper Mills, Valleyfield, Que. The former is a sheet of Imperial Art Book, which is a very nice sheet, the latter is a new line at Valleyfield, called Blue Ribbon, a paper that gives the advantage of the smooth coated surface at a moderate price.

WAGES IN THE NEWSPRINT MILLS

The Associated Press under date April 27th issues the following:

"Eleven Canadian and United States paper manufacturers, producing nearly one-half of the newsprint consumed in the United States, to-day signed agreements with union representatives of their employees, increasing wages for all classes of labor five cents an hour. The agreements are for one year beginning May 1, 1923, and affect more than 50,000 men.

The Great Northern, Ontario and St. Croix paper companies granted a union demand for a flat increase of five cents an hour for all classes of skilled and unskilled labor. The other eight companies—Abitibi, Spanish River, St. Maurice, Fort Frances, Minnesota and Ontario, Union Bag and Paper, Hanna and St. Regis—signed an agreement increasing wages five cents an hour for all classes of skilled labor and fixing 40 cents an hour as a minimum for common labor.

The agreement reached between the last eight manufacturers and the representatives of six paper workers' unions was a compromise arrived at after two days of conference. The manufacturers had offered a flat increase of four cents an hour for all classes of labor.

That offer was rejected by the union men who asked for a 10 per cent increase in wages. Yesterday they made a counter proposal which served as a basis of today's negotiations.

A spokesman for the pulp and newsprint industry said today that today's action by the eleven newsprint companies undoubtedly would be followed by the other manufacturers employing union labor, who now were negotiating with their employees on the wage scale for labor which had not made wage adjustments would be affected it was said. It was pointed out that the International Paper Co., one of the largest companies employing non-union labor recently had made wage increases amounting to about eight per cent for all classes of labor."

RESULTS WERE GRATIFYING

A friend in Fort Frances writes:

Under dates of February 26th, 27th and 28th, we gave a free entertainment which consisted of a show entitled "The Workmens' Lesson". The results of this were very gratifying. We wish to assure you that safety first appliances and propaganda are the only things that will succeed in the elimination of casualties and accidents. We consider that we are only doing our duty when we advance the cause—not only for our own factories but for others as well.

MR. H. S. TAYLOR

President, Technical Association of the Pulp & Paper Industry.

Mr. Taylor is a prominent mill engineer and the head of H. S. Taylor, Ltd, Montreal

HEAVY SHIPMENTS OF N. S. PULP

Heavy shipments of pulp are being made from Digby and Shelburne and also from St. John. The freighter Keyingham is bound across the Atlantic for Queensboro, England, with a cargo of 5,470 tons, and the steamer Gyp from Port Medway for Rouen, France, with 4,675 tons. Another steamer is expected to load from 3,000 to 3,500 tons at Digby and Shelburne within a month. All these shipments are being made by I. H. Mathers and Son, who are the representatives in Eastern Canada of the Becker Interests.

The steamer Keyingham, after discharging a cargo of Welsh coal at St. John, loaded 1,500 tons of sulphite pulp there and then went to Digby where she loaded 1,700 tons of mechanical pulp, later proceeding to Shelburne, where 2,270 tons of mechanical pulp was placed aboard.

The Gyp also loaded 1,000 tons of sulphite pulp at St. John, and 2,675 tons of mechanical pulp at Digby and at Port Medway loaded 1,000 tons of mechanical pulp.

The pulp shipped from Digby is from the Weymouth Mills, and that from Shelburne and Port Medway from the Clyde Mills. Both mills are owned and operated by the Clyde and Sissiboo Pulp Company.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 1. — The local paper trade has not changed to any extent. As a whole, it is fairly good, although some jobbers state that it is spotty in character.

The mills report that orders are coming in at a good rate; some lines are more active than others, in fact in some instances shipments are over due. In almost every line the position has not varied, business being on a steady basis.

The trade figures for the fiscal year ending March 31 are quite favorable. They show a trade balance of $129,772,400 on the right side compared with an adverse balance of $7,522,304 in the previous year. Our exports of paper and forest products played a principal part in this condition, these ranking second in the list of exports with a total of $228,756,205. In March they showed a gain of over seven million dollars, and were the largest in amount of any of the commodities, pulp and paper holding first place among manufactures.

There is no sign of a slackening in the demand for newsprint. The insistency of the buying may be judged from the fact that in March the exports were 113,450 tons, the highest in the history of the industry. Canadian mills are increasing their production, that for March being 106,361 tons, the best on record. The strides made in this section are illustrated by the following figures of exports to U.K. 1916-17, 481,600 tons; 1922-23, 941,813 tons, an increase of nearly 100 per cent. With the new machines coming into operation our production will be materially increased, and it remains to be seen how this will be absorbed. Judging from the statement made by Mr. P. T. Dodge, president of the International Paper Company, it looks as if he anticipates that the Canadian mills will increase their newsprint business at the expense of American producers. He complains of the lack of protection against European and Canadian competition. Canada, he pointed out, is able to manufacture paper from wood which is obtained largely at a low price from Crown lands without capital investment on the part of manufacturers with water powers advantageously obtained in part from the Government, and with electric power supplied cheaply by private and Governmental producers. Mr. Dodge made another protest against the embargo on the export of pulpwood from Crown lands, and declared that the result of the policy of free trade in paper is that the U. S. is producing from year to year a decreasing percentage of the total consumption of newsprint, while on the other hand, foreign mills, and notably those of Canada, are being rapidly expanded. In time the result will be a great shrinkage in the U. S. newsprint production and the necessity for U. S. publishers to secure their paper from outside countries in which there are no laws to prevent combinations on the fixing of prices.

The agreement as to wages signed in New York on April 27 may have an influence on the price of newsprint for the last half of the year. The agreement between the Unions and eleven Canadian and United States Companies was only arrived at after considerable negotiations, and represents a compromise between the demands of the men and the offers of the companies. The Great Northern, Ontario and St. Croix Companies granted a flat increase of five cents an hour for all classes of skilled and unskilled labor. The other eight companies — Abitibi, Spanish River, St. Maurice, Fort Frances, Minnesota and Ontario, Union Bag and Paper, Hanna and St. Regis — signed an agreement increasing wages five cents an hour for all classes of skilled labor and fixing 40 cents an hour as a minimum for common labor. The agreement is for one year, beginning May 1. Negotiations with other companies have been entered into, and it may be taken for granted that the agreement entered into by the eleven companies referred to will affect the wages paid by non union and union Companies in the paper trade generally. It is satisfactory that a settlement of this question has been made, thus eliminating the possibility of trouble.

The pulp section keeps up very well, as is only natural in view of better grinding facilities, the price of groundwood has receded but it is likely to firm up again when low water conditions set in. Kraft pulp has moved upwards, with a better demand, while sulphite keeps steady. The call for bleached sulphite is still good, and although there is not likely to be an appreciable increase in the buying, the chances are that Canadian mills will have a steady demand. Some of the importers of Swedish pulp in the States have cancelled a portion of their contracts, due to the impossibility of supplying all the requirements on account of the industrial dispute.

Pulpwood is firmer, with an upward tendency. Many large sales have lately been made.

Ontario Market News

The current volume of business, both from a manufacturing and a jobbing standpoint continues somewhat light, although mills are kept busy on commitments made some weeks ago when price increases were in the air. For the most part the jobbers say that April has been disappointing as to volume of sales, which is probably accounted for by the backward spring which has had a detrimental effect on practically all lines of business. The printing trade has shown little signs of improvement and the paper box trade is still rather quiet, which means that the production of the board plants has been curtailed to some extent. Practically no board is coming in from the United States at the present time and importers say that the American mills are making quotations to Canadian consumers for acceptance within five days which is a good indication of the prosperity that is attending the box board industry across the line. The Canadian prices remain firm and are likely to continue unchanged for some months, or as long as the American market remains strong as it is at present. It is estimated that very few of the Canadian board mills have more than three or four weeks orders on hand at the present time whereas, under ordinary conditions, many of the plants have orders ahead for several months. It is generally believed, however, that the paper trade generally in Ontario is liable to recover at any moment and the prevailing conviction is that when it starts off again it will go with a bang, for stocks have been allowed to get very low.

PULP.—There is only a fair amount of activity in pulp circles and comparatively few stocks are being sold. There is, however, a fairly steady volume of business from pulp to paper mill although the transactions are not large. Prices remain unchanged, groundwood being quoted at $35.00; bleached sulphite at from $80.00 to $90.00 (more for special grades) and unbleached at from $55.00 to $70.00 and newsgrade at $56.00. Groundwood stock reserves are said to have been pretty well wiped out.

BLANKS.— A feature of the week was an increase of about ten per cent. in printers' blanks. The various grades of blanks of Canadian manufacture underwent the increase probably in sympathy with the American prices which have been edging up for some time. There is a fair all-around demand for blanks of all descriptions.

BOOK AND WRITING PAPERS.—Mills manufacturing book paper for the publishing trade are quite busy although sales to the jobbing trade are rather light. There is a steady demand for bonds, ledgers and various lines of writing papers and although the era of big orders is not yet to hand the total volume of business for April bulked fairly well both in the jobbing house and the mills.

TWINE. —The twine market continues rather quiet. An increase was recorded during the week in jute twine of from ten to fifteen per cent. probably due to the strike in Dundee and the increase in wages and raw material. Owing to the condition of the cotton market there is somewhat of a scarcity of jute twine and there is difficulty in meeting the demand.

WRAPPING PAPERS. —Mills manufacturing wrapping paper and paper bags have not been so busy of late and the jobbers report trade as unusually quiet. On the other hand a big business is being done in the paper flour sack line which is proving profitable to those mills engaged in their manufacture.

PULPWOOD. —The Thompson- Hyland Lumber Co., Bay Street, Toronto, are entering into contracts for 50,000 cords of pulpwood for delivery during the coming season, 20,000 cords of which will be poplar. There is a growing demand for poplar and prices have stiffened on this wood to some extent. The firm have shipped out all last year's cut of pulpwood with the exception of a few thousand cords which will go forward within the next few weeks. The prices on peeled spruce stand peeled balsam north of North Bay are $8 to $10 a cord f.o.b. cars and peeled poplar $5 to $5.50. South of North Bay peeled spruce and balsam are quoted at $11 to $12 and poplar $7.50 to $8.50. Contracts are being made with settlers and others and cutting will start in May and continue till the close of the peeling season early in August.

NEW YORK MARKETS

New York, April 28 (Special Correspondence).

Reports from some quarters tell of a quieter condition in the paper markets. This apparently is true only as concerns the jobbing trade. Consumers in a good many instances have evidently let up in their buying to some extent, with the result dealers and jobbers are not so rushed as they were, this situation reflecting the fairly heavy purchases by paper users during the past several months and the consequent covering of requirements for a time. Paper mills are reported to be still actively engaged. There has been little or no diminishing of manufacturing operations; if anything, mills are running at greater capacity than hitherto, and are generally said to have orders on file which will keep them producing at the present rate for quite a while to come.

The Federal Trade Commission's report for March shows that activity in the newsprint manufacturing industry has not let down a single bit. During March production of print paper reached a new peak, not only in the United States but in Canada, and the Commission's report shows that mill stocks continued to decline, thus indicating that consumption kept pace with the ouptut or that it exceeded production. U. S. mills produced 129,294 net tons of total newsprint in March, which was substantially over the 114,611 net tons produced in February and also greater than the 127,452 net tons produced in January; comparing also with 117,507 tons in March a year ago, and 105,700 tons in March five years ago.

Combining the reports of the Federal Trade Commission and the Canadian Pulp and Paper Association, it is found that newsprint production reached a new high record on the North American Continent in March last, being over 235,000 tons for both countries. Shipments from mills exceeded this by over 1,000 tons, and reports are to the effect that consumption last month was the heaviest on record except in October, 1922. Normally less newsprint is consumed in the spring than in the fall. High consumption so far this year is taken to indicate that the record of about 2,500,000 tons in 1922 will be materially exceeded in 1923.

United States mills shipped out 132,292 net tons of total newsprint in March, which was about 3,000 tons above the production. At the beginning of March domestic mills held 23,197 net tons of newsprint in stock and at the end of that month stocks had been reduced to 20,199 net tons.

No less an authority than President Philip T. Dodge of the International Paper Company is quoted as saying that newsprint prices are due to advance. Mr. Dodge stated several days ago: "I do not see how newsprint prices can help but be higher, in view of the generally increased wages, higher raw material prices and higher transportation costs." Mr. Dodge intimated that he expects that the present contract price of $75 per ton will be increased to at least $80 for the third quarter of the year.

A new wage agreement has been signed, as reported elsewhere in this issue.

No changes of note have occurred in prices of paper. Quotations are firm in all quarters and consumers apparently are meeting the figures named without hesitancy on such supplies as they require. Book paper is firm and moving in increasing tonnage; wrappings are fairly active, with prices steady; tissues are in good call at previous quotations, and fine papers are wanted in gradually increasing quantities with prices evincing an upward tendency. Box boards are still relatively quiet though there is nevertheless a good movement of boards and prices are maintained at last levels.

GROUND WOOD. —Mechanical pulp quotations continue on a broad range. This seemingly is not due to any fundamental weakness in the market but to weather conditions which have enabled grinders in some localities to increase their output, thus softening prices, and in other districts preventing any quickening of producing operations, thereby holding prices firm.

Enrollment in the Pulp and Paper School of the Institute of Industrial & Domestic Arts has passed the 280 mark!

Demand for ground wood appears fairly active. Newsprint, board and other manufacturers are absorbing supplies freely as their needs develop though it is true there is little desire shown to anticipate requirements, this being the season of the year when consumers buy ground wood rather closely.

Prices may be said to range from as low as $33 a ton at producing plants up to $43, depending on the locality of the grinding mill and the distance the pulp has to be hauled to the consuming plant. Domestic grinders are mostly quoting around $38 a ton f. o. b. pulp plants, while Canadian grinders are reported naming $35 in a majority of cases.

CHEMICAL PULP.—Chemical wood pulps are firm in price and are moving in a steady way. Perhaps demand lacks the volume of busier periods but there is nevertheless enough buying to fully maintain prices, while the several bullish market factors have a tendency to advance values. Kraft pulp is especially firm. Board mills are buying freely, and signs are that stocks of kraft are low. Importers are said to have but small lots on the spot in this country unsold, and the quotation commonly named on Swedish kraft pulp is 3.40 cents a pound ex the dock. In some cases importers are reported asking 3.50 cents but it is admitted sales have not been made at quite this figure as yet. Sulphite also is quotably firm and in steady demand. No. 1 foreign unbleached sulphite is selling at about 3.40 cents a pound on the dock at New York, with extra strong sulphite held for 3.50 cents and with easy bleaching quoted up to 3.75 cents. News grade sulphite is firm at around 3.25 cents f.o.b. pulp mills. Bleached sulphite is quoted at 4.50 to 5.00 cents a pound ex dock for No. 1 foreign, and from 4.75 to 5.25 cents at pulp mills for the No. 1 domestic grade.

RAGS. —Most grades of papermaking rags are meeting with a fair demand. Buyers are exercising caution about laying in supplies; that is, most of them are absorbing rags against direct requirements, which is the usual procedure during the spring of the year, yet in the aggregate there is a fairly large movement into mill channels and prices are maintained. Roofing rags continue to sell readily although in comparatively smaller lots than up to a short time ago. New York dealers report securing 1.60 cents a pound f.o.b. this city for No. 1 roofing stock and 1.50 cents for No. 2 packing, while foreign dark cottons are bringing 1.55 to 1.60 cents a pound ex dock in sales to felt paper mills. New cuttings have quieted down to a pronounced degree but prices have changed but little, if at all. Dealers have disposed of sufficient stock recently to enable them to display a more or less independent attitude, and are holding rags at the prices they succeeded in getting in sales a short time back. Old white rags are firmly quoted and are in good demand. A good packing of No. 1 old white is reported commanding 8 cents a pound from fine paper mills, and even this figure has been exceeded in some transactions. Thirds and blues also are moving freely and at steady prices of around 2.65 cents per pound for repacked and 2.25 cents for miscellaneous packing.

PAPER STOCK.— The waste market is still characterized by an easy price tone. Quotations have shown narrower changes this week than in the several previous weeks, but the tendency is downward and such alterations as have occurred have been off in practically every case. Prices have worked down to levels where it is said collections are being affected; reports stating that collectors are going on strike in the contention that they cannot make a profit under prevailing prices.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

No. 1 old mixed paper is selling at about 90 cents a hundred pounds f.o.b. New York, folded newspapers at 1.05 cents a pound, and common mixed paper at 70 cents a hundred pounds. The probabilities are buyers in some instances have had orders accepted at less than these prices, since these low grades are the weakest and since packers are necessarily obliged to keep such stock for No. 1 soft white shavings. Flat stock is almost dead insofar as regards any important demand from consuming quarters. Offerings of heavy No. 1 magazines at 2.10 cents a pound New York are said to be going begging, and mills could doubtless buy in some directions down to 2 cents a pound. Old kraft paper is bringing about 2.15 cents per pound, and white blank news 2.20 cents a pound.

OLD ROPE AND BAGGING.— Old manila rope is freely wanted by paper mills and is fetching firm prices. Domestic manila rope is scarcely available at less than 7 cents a pound at shipping points, and there have been reports of sales to mills in excess of this figure. Foreign rope is quoted at between 6.75 and 7 cents per pound ex the dock. Old bagging is quiet and rather easy in price. Only occasional shipments of note are moving forward to mills, and prevailing market quotations are around 1.25 cents a pound for No. 1 scrap bagging at dealers' points, 1.05 cents for roofing bagging, and 1.60 cents for scrap gunny bagging.

CANADIANS AND THE U. S. TARIFF

The tariff imposed by the United States on Canadian products since 1921 has continued to affect our exports to that market, says the April Commercial Letter issued by the Canadian Bank of Commerce. During the five months ending February last, Canada exported to the United States farm products valued at $28,100,000, as compared with $119,700,000 for 1921 and $58,700,000 for 1920. The products most affected are wheat, exports of which have shrunk from 37,467,310 bushels during these five months in 1921 to 8,800,876 bushels in 1923, and flour, which has shrunk from 895,035 barrels in 1921 to 273,433 barrels in 1923. The Maritime Provinces for a long period depended on the United States as a market for potatoes, and during the same five months in 1921 1,436,773 bushels were shipped, as against 204,418 bushels in 1923. Exports of wool during the same period were 3,712,028 lbs. in 1923, as compared with the merely nominal quantity of 129,872 lbs. in 1922 and 4,961,686 lbs. in 1921. On the other hand, the number of cattle shipped to the United States for the five months ending February 1923 was approximately the same as in 1922, and there was a substantial appreciation in value. In the case of butter, the volume shipped has not declined to any extent since 1922, and the 1923 shipments are actually considerably in excess of those of 1921.

In our view, as we have more than once indicated in these columns, one of the effects of the United States tariff is almost certain to be a drastic readjustment of the world's trade with that country. By any such readjustment Canada cannot fail to be very greatly af-

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

fected. For one thing, our exports to the United States will increasingly fall off — and particularly our exports of foodstuffs. That is the dark side of the picture. But there is a bright side to it, too. Great Britain finds that her manufactured goods are, in the main, barred out of the United States by the new tariff, just as are our foodstuffs. This being so, she is unquestionably more disposed to buy her foodstuffs from Canada than in the United States.

Already Great Britain buys a good deal more from us than do our friends to the South. In fact, we export to her goods valued at about $314,000,000 per year, of which foodstuffs form in value about two thirds of the total. For the reason just assigned her purchases of our foodstuffs are likely largely to increase in the future. And for the same reason our exports of other kinds to her will also probably increase. So that, while she is a good customer already, she is likely to become a far better one in the future.

That is, if we show any symptoms of an intention to reciprocate. Surely it is only common-sense that we, on our part, should endeavor to buy as much as possible from so good a customer. For the twelve-month period, ending the 31st of last August, while Great Britain purchased from us goods of the value of $314,000,000, we only purchased from her goods about two-fifths of the value of those she bought from us. In the same period, we bought in the United States goods of the value of nearly $500,000,000, or over half as much again in value as those that country bought from us. It looks as though there were room for readjustment here in the way of buying more from those who buy from us. And this apart from what we take to be the undoubted fact that Great Britain, with her fixed tariff policy, offers advantages to Canadian export trade such as the United States, with a variable tariff policy, cannot do.

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Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chpaleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what theey are prepared to pay, per thousand feet Board measure, for the following classes of timber,, over and above the upset prices in addition to Crown dues:

Upset price — Red and White Pine	— $6.00 pr M ft. B M
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, ,is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

Toronto, April 16th, 1923

BENIAH BOWMAN,
Minister of Lands and Forests.

N. B. — No unauthorized publication of this notice will be paid for.

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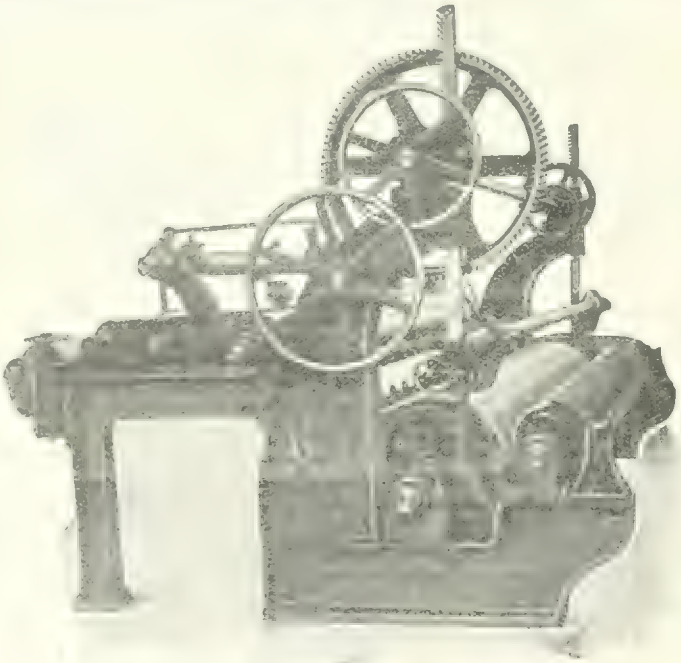

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. Gardenvale, Que., May 10th., 1923 No. 19

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EDITORIAL

WE ARE GUILTY

The editor pleads guilty to a self imposed charge of overlooking an important point in connection with the protection of our forests. From time to time, in these columns, mention has been made of the necessity for co-operative efforts among the Provincial Departments of Lands and Forests and the Dominion Forestry Branch. In some cases, a fairly satisfactory measure of co-operation between provinces has been agreed upon, and even some co-operation between provinces and an American State government has been planned.

The point that we have overlooked, however is the apparent lack of cordial, complete and organized co-operation between the Mines and Forestry Departments of our various governments. Apparently there is less appreciation of the mutual problem of forest protection and the need for co-operative measures in this respect between these different departments of the same governments than there is between the Departments of Forestry in neighboring provinces. It is apparent that the men who are in the woods, both as cruisers and prospectors, are alike in their appreciation of the forest, and the realization of the necessity for its protection. For both of these men, the green forest is essential and the destruction of it by fire is not only likely to take away their living, but also their life. This thought is very well expressed in the following letter which we quote from the Canadian Mining Journal.

The Prospector and Fires

To the Editor,
Canadian Mining Journal.
Sir:

I see by your editorial of April 20th, "The Prospector and Forest Fires," that the lumberman accuses the prospector of starting bush fires, and I note with appreciation that you left very little unsaid in the prospector's defence.

Now, this question of forest fires is one of the most serious in our North Country—serious not only as a great financial loss that affects us all, but serious as a menace to human life. Who, I ask, is more likely to get caught in a bush fire than the man whose work is in the bush, the prospector? What about the lumberman?—you ask. Well, the lumberman about this time is usually safe out of the woods and on the rivers or lakes, driving his winter's cut of logs, or down at the saw-mill, where he has a chance for his life. But the timber cruiser, the surveyor, the geologist, the prospector,—the men who have to camp in the woods when night overtakes them, miles from their canoe or from a lake to give them a chance for their lives —these are the men who know what they are up against. The moment they shoulder their packs and head off into the woods (after submerging their canoe in a creek or sheltered bay, for safety's sake)—you'll agree with me that a bush fire has a *real* meaning to these fellows.

Again, the prospector is often dependent for his daily bread upon that green strip of standing timber—the only kind of timber where he can hope to trap the fisher, marten or beaver that he hunts during the winter to provide his grubstake for next summer's work.

Many more reasons could be advanced to prove that the prospector is *NOT GUILTY* of starting bush fires, but time and space prevent.

In conclusion I will remind the lumberman that the two best fire-rangers he ever had or is likely to have are the two men most vitally interested in the preservation of our forests from fire—the noble Red Man, and Esau, the bona fide prospector.

Gogama, Ont. Tom Saville

The essential and pressing problem and need just now is the establishment, as rapidly as possible, of the most adequate means of protection of the forest from fire. The basis of this protection is a system of permits, patrol and punishment, accompanied by the most efficient possible education of the public to the value of the forests, and the need for extreme care, when in the woods. These measures can only be made completely effective by the fullest co-operation of all bodies interested in this problem.

A STRANGE SITUATION

The editor is in receipt of a letter from a correspondent in France who deals in woodpulp. Communication with a number of manufacturers of both groundwood and sulphite pulp indicates that there is practically nothing available in either of these lines for export to France. It would appear that the entire production of pulp mills in eastern Canada is required by their own paper mill or by the contract and spot markets for other Canadian mills, and those in the United States or Great Britain. It is known that the product of some of the pulp mills in the east is marketed in France through an English agency. It would seem, however, that with the period of maximum water approaching, consequently the time of maximum production, there would be some surplus available for export, particularly at a time when the market for groundwood is a bit soft. On the other hand, the production and consumption of woodpulp on this continent are very nearly balanced.

It was intimated in news dispatches a short time ago that certain French interests were looking into the possibilities of establishing a pulp mill in New Brunswick. It would seem that some such move as a financial investment in Canada would be the only practical way of a French mill assuring itself of a definite supply of woodpulp. Looking over the mills in the east, there do not appear to be any, as far as we are aware, that are not in some way provided for with a fairly regular outlet for their product. However, if there are any plants with a surplus of pulp available for export, the Pulp & Paper Magazine will be able to put such a concern in touch with our correspondent.

PROFESSIONAL BUSINESS PROPHETS

The number of vocations that arrogate to themselves the title of "profession" is continually being added to. The latest is probably that of the business prophet. Indeed, at no previous period in the world's history has anything like a tithe existed of the number of people who deem themselves fully qualified, with almost pontifical authority, to forecast business conditions.

This forecasting of future conditions, by means of diagrams or charts of the past, seems not only to have a strong fascination — and also, one imagines, a very profitable one — for those who practise it, but it also hits the taste of the general public. Few things, indeed, are more surprising than the way in which business men, big and small alike, seem ready to pin their faith to predictions based on these diagrams and charts. And this in spite of the fact that the predictions in question have an awkward way of being falsified, more often than they are ratified, by events.

"The worst of great thinkers," once said John Bright, "is that they generally think wrong." The forecaster of business conditions — the diagrammist and chartist—has this, at least, in common with the "great thinkers" of whom Bright spoke—he is generally wrong. Not invariably, of course. Not everyone who essays to "forecast conditions" in the matter of a horse-race loses his money. People have been known, ere now, to break the bank at Monte Carlo. And just as the "plunger" who backs a "certainty", or the gambler with an "infallible system" sometimes guesses right, so, too, does the business "tipster."

But, it may be said, the business forecaster has his data to go on — his records of financial, commercial and industrial conditions in the past. Well, so has the race-course punter his "racing form"; and the "system" of the sportsman who essays to "break the bank" is not infrequently based on some more or less murky lore regarding the ratio of the number of ways in which a particular event may occur to the number of ways in which it may not occur.

The truth of it is that the business forecaster with his diagrams and charts and his learned talk about "cycles" and all the rest of his professional paraphernalia is up against one supreme and, to our thinking, insurmountable difficulty. In predicting that a period of prosperity will be followed by a period of depression he is on sure ground. But, when he attempts to measure with any approximate accuracy the length of any given period of business prosperity or business depression, he encounters the difficulty of which we are thinking. Charts of these business conditions in the past would be helpful enough as a guide to the future if only those who put them forward as such could ensure that the determining factors to confront us in any given future period would be precisely the same as those encountered at a given period in the past. That, of course, they cannot do. And if the cause — that is to say, the determining factors — differ, the effect cannot be predicated to be the same.

This is not to say that existent conditions should not be analyzed or that attention should not be paid to symptoms. But the theory of periodicity in the alternations between prosperous times and times of depression is, and must necessarily be, always liable to be upset by particular forces at work at a particular time. A chart of the past, before the war that was to end all war, for example, can be of little use as a guide to the future to the world in its inflammable state today. For our part we believe in letting the forecaster's charts and diagrams alone, and devoting the time and energy which are required for their study to the work that needs doing now, leaving the future with its "cycles" to take care of itself. —From the Journal of Commerce.

SAYS LLOYDS' IS BIGGEST PAPER MILL

Mr. A. A. Richards of Edward Lloyd, Sittingbourne, England, is on a visit to Canada to investigate the pulp situation from the point of establishing a pulp mill in Canada. Lloyds are very extensive users of pulp, and Mr. Richards is here making inquiries as to the economy and feasibility of manufacturing pulp for use in their own very extensive paper mills. Among other mills, Mr. Richards will visit Chicoutimi and Kenogami.

In discussing the question of exporting Canadian newsprint to the U.K., Mr. Richards expressed the opinion that conditions were unfavorable for Canadian mills entering that market. He pointed out there were considerable difficulties, especially in relation to supplies. Mr. Richards referred, in this connection, to the lack of storage facilities in London as it affects the newspapers. The latter obtain their supplies from hand to mouth, from barges, and have no facilities for carrying large stocks. The peak of the demand is at the week end, for the Sunday papers, and these secure their requirements once a week from barges. Incidentally it might be pointed out that this obstacle to Canadian trade might possibly be overcome by the establishment of distribution warehouses, the Canadian mills keeping these fully supplied.

Mr. Richards stated that the newsprint trade in Great Britain is good. The papers have increased their circulation, and there is a demand for all paper available; at the same time Mr. Richards discouraged the idea of any permanent market for Canadian newsprint being developed in the Old Country, for the reasons given.

Mr. Richards also declared that, in spite of all claims to the contrary, Lloyds' have the largest newsprint mill in the world, producing between 500 and 600 tons per day. The Company is constantly adding to the equipment, and expect to give the Canadian mills a good run for the distinction of maintaining the largest mill in existence.

FADE-OUTS OF HISTORY

By SAMUEL HOPKINS ADAMS

(Reprinted from Collier's, by arrangement)

History should, theoretically, be the easier to write as time goes on. Records multiply. But will some triumphant antiquarian, four housand years hence, who has come upon one of our massive twentieth-century librairies find, neatly arranged and tabulated for him, the multitudinous memorials of the daily life of 1923?

He will not. All that the Americanologist of 6000 A. D. will get when he has hopefully dug down to the archives of our day will be a noseful of dust. The ancients wrote their messages on the eternal rocks. We write ours on the transient trees, pulped and rolled into perishable paper. In a word, our pricipal records of the present day and recent history are already in process of resolving themselves into an inferior grade of sawdust.

News To-day, Sawdust To-morrow

Two years ago I came down from my country place to New York to study the early examples of yellow journalism, now only a quarter of a century old, bringing, as it chanced, a Babylonian document of about 2500 B.C., which had been presented to me and now needed expert reframing. At the New York Public Library I found the yellow journals of the early nineties yellow in the strict chromate sense of the word, and so tattered and fragile that I decline to take the responsibility of handling them except with the assistance of an official. The contrast of condition between these products of yesterday and my relic of 4,500 years past was more than striking; it was grotesque.

Other newspaper records in the same repository were, in varying degrees, approaching the same condition. That experience started me on a course of inquiry concerning a subject which except by a few forethoughtful librarians and a very few progressive newspaper managers, has been totally ignored. The general condition discovered may be summed up in the words of H. M. Lydenberg, the expert of the New York Public Library:

"One hundred years from now, unless preservative measures are taken promptly, the man who goes to a library to consult to-day's news prints will find a mass of sawdust streaked with traces of ink. Newspapers will exist only as museum specimens."

This is true also of great majority of prints commonly regarded as of higher grade, importance, and lasting power than the daily press. But it is the newspaper that is typical.

In the middle eighteen-seventies paper made from ground-up trees began to come into general use. Previous to that our news was committed to rag paper which, aside from fire, water, or other artificial destruction, is practically eternal. The first book printed up on rag paper is as sound today as the day it came off Gutenberg's press nearly five hundred years ago.

The early forms of wood-pulp paper were almost pure cellulose, and this grade, in the opinion of some experts, is almost as enduring as the rag stock. Then a cheaper process, and one (fortunately) involving much less destruction of the forests, was discovered in mechanical instead of chemical wood pulp. Mechanical pulp is made by grinding up the whole tree against a sort of gigantic emery wheel, which leaves not only the cellulose tissue, but also all the highly perishable ligneous material which, in the more expensive processes, is eliminated. From the time of this invention the vast majority of our documents were foredoomed to early extinction. Exposure, light, moisture or heat causes the ligneous tissue to disintegrate. As this represents about 45 per cent of the original pulp, not enough cellulose is left to stand up by itself, and the whole structure of the paper eventually collapses.

Take, for purposes of contrast, the news sheets of the American Revolution and set them beside the newspapers of the World War. The issues of the seventeen-seventies, made of high grade rag stock, are as clear, sound, and legible to-day as when published. One can handle them freely without fear of damaging them. Now take down one of the New York Public Library's bound files of the New York "Times"—and put it back again if you are bent upon research, for it will be valueless to you. Flakes of rotted paper as large as your hand detach themselves, flutter to the floor, and break under the fingers as you essay to restore them. Not a leaf in the volume is intact. It is just a mass of wreckage. Yet the "Times" is published on as high quality of paper as any daily. Of course, in one respect, this is an extreme test: the New York Public Library files are used probably three or four times as much as those of any other library in the country, and the editions which record the opening days of the World War are in special demand. But that is just the point; the records which have the greatest historical interest are the very ones doomed to the earliest dissolution.

At the Congressional Library in Washington it is possible to preserve this class of documents more effectively since there is far less call for them, and they are in better condition when bound. In fact, this repository may be taken as exemplifying the best conditions of preservation. Selecting, at random, specimens from its files, I found that the New York "World" of 1895 was several tones browner (indicating the degeneration of the ligneous tissue in the paper) and much more brittled than the tissue of 1880, which was a better grade of pulp and which, in turn, was far below the standard of the rag stock of 1870. The 1900 volumes were about as bad as 1896, and 1915 was already distinctly inferior to 1880, which is, in color and general appearance, about equal to a current issue.

None of these papers, except the 1870, is to be compared for upstanding condition to the Boston "Gazette" of 1801. From the general state of these carefully maintained specimens, it would appear that the "expectation of life" of even the low-grade mechanical wood pulp might be considerably prolonged under conditions of withdrawal from public use. But here enters another consideration. The life of a newspaper volume is measured by the life of its binding. For, so fragile do the sheets become in a few years that they cannot withstand the process of rebinding, but immediately tear out where the threads are run through, thus rendering them impracticable for consumption.

Records Die with Their Generation

For those who hold that the daily press is inessential to the historian, and that future history can be comprehensively written from other documents — a false promise, I believe, since, as the world grows more democratic in control, what the mass of people thinks and does and aspires to grows constantly more important in the historical sense — the prospect is still far from reassuring. Other documents, more specifically destined to longer life, are threatened about equally. The Congressional Record, which is certainly of prime historical value, is little superior to ordinary newsprint in quality and durability, and will outlast it only a few short years, if at all. Today's Gentleman from Indiana, whose thrilling eloquence gets itself into official type under the "leave-to-print" formula, enjoys a prospect of immortality painfully less than his dead-and-gone predecessor of half a century ago whose political hopes and passions were confided to a sound rag paper. Already the Records of the nineties show evidences of discolorations and flimsiness. It may well prove that their term of life will end with the necessity of rebinding them. Few, if any, of our State legislative prints are any better.

Of equal importance in another field are the scientific publications of the Government, some of which appear on good quality of sulphite pulp, some on newsprint. That the bulletins for the immediate and temporary information of the farmers, for example, should shortly fade away is no loss. But suppose that, seventy-five years from now, there should come a plague of the seventeen-year locust (which isn't a true locust, but will serve for illustration). It might conceivably be of the highest importance for the entomologist of that day to trace the genealogy of the devourers. Yet he might find nothing more valuable to his research than a mess of feathery pulp.

Practically all of our fiction, and much of our more serious book publishing, is now done on "second-hand" paper, repulped and cleansed from news print. Its expectation of life is no greater than that of the original stock; probably less. In an age which deems itself overrich in documentation it is surely a curious reflection that the baby born this year may well outlive all the public prints and most of the deathless literature of his little day!

If the current history of our time is to endure, except by the process of repetition and handing on from book to book, it must be through one of two devices. Special editions of newspapers and periodicals may be issued on rag stock. From all that can be determined, this would last as long as parchment or papyrus; that is, an indefinite number of centuries. All of the fifteenth century books now known to be in existence are in excellent condition. As for the print itself, that is practically imperishable; printer's ink yields only to the strongest acids. The experiment of getting out a special library edition tried in England by the London "Times," not on rag stock but on paper of good quality, and is still being continued, though at a loss.

The other method of preservation is the one now retained in use at the New York Public Library, after several others had been tried and discarded. The newspaper to be treated is divided into single leaves. The separate leaf is then covered on each side with a handmade vegetable fiber of the kind known as Japanese paper, thin, light, transparent, and highly durable, the process being completed with rice paste. The cost is about $45 per monthly volume; $540 per year for each daily. I have seen a file of 1895 which had been carefully secluded and, twenty years later, was covered with the Japanese paper. It is now in perfect condition very slightly reduced in legibility by the necessity of reading through the covering, and can be rebound indefinitely, as the coating paper will not degenerate. Specimens of the same date, uncoated, are now flaking to bits. Any attempt at rebinding them would be futile; the edges would tear away at once.

Since 1916 the "World" has borne the expense of thus preserving a file at the Public Library, and later the "Times," the "American," and the "Herald" gave a similar public-spirited guaranty. Issues thus protected have been exposed to a week's direct sunlight in the open air and show no deterioration. Similar exposure of last week's paper would burn much of the resistant quality out of it. With the exception of these few dailies, there are no prints of this class being scientifically preserved.

The World War daily history is disintegrating under our eyes. And there are no funds available for saving all this material for posterity. Here, surely, is the opportunity for some forethoughtful and public-spirited philanthropist of to-day or posthumous benefactor of to-morrow to become, at less than the founding cost of a single library, if not a maker of history, then — perhaps with far more enduring benefit — its foremost modern preserver.

BOOK PAPER MANUFACTURERS

The Book Paper Manufacturers Association at its meeting on Monday voted to dissolve and to turn over all its records to the so-called "Book Paper Converters Association." The change was decided upon in view of the fact that the Book Paper Manufacturers Association represented only about 40 percent of the industry, while the converters' association represents nearly 90 percent. The change is more or less of a change of name to make the organization more specific, as most of the mills in the old organization will continue in the newly formed association has not yet been decided, but details or organization will be taken up at another meeting to be held May 3, either in the west or the east. Until that meeting the satittical work will be continued, in order not to break the continuity of production and other records by E. H. Naylor, who has been secretary of the old Book Paper Manufacturers Association.

Alex W. Gilman of the Allied Mills of Kalamazoo is president of the new organization, but other officers have not been selected.

Students of the Oneonda, N. Y. High School have planned to plant 10,000 pine trees seedlings as their part of a ten-year program for reforesting the watershed of Oneonda Creek. The trees will be provided by the State Conservation Commission and will be set out under directions of its representatives.

A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

(Continue from last issue)

As before stated, the mill product — "news" — is composed of approximately 25 per cent chemical pulp and 75 per cent. mechanical pulp; hence the logs leave the storage pile by two routes to meet finally in the mixing system. The sulphite process produces about 1,200 lb. of air-dry sulphite fiber per cord of wood. It may be noted that being floated down the river, tumbled through the barkers and then onto and out of the storage piles so thoroughly mixes the spruce and balsam logs that there is practically no variation in the quality of product, actual checks at the conveyors over several hours having shown that the proportions vary less than 2 per cent.

In the sulphite process the cleanest logs are selected at transfer points in the conveyor system and sent to the chipper building. Here they may be washed in a drum similar to the drum barkers but shorter; then, if knots or discolored spots remain, such logs receive special treatment on a knife barker.

The thoroughly cleaned logs now go to the chippers, of which there are two, each taking its quota. The chipper is a heavy 7-ft. disk carrying three radial blades set as in a plane. The logs by ones, twos or threes, according to size, are fed down a chute at an angle of 45 deg. with the disk, and they are rapidly reduced to chips the size of "small change."

Conveyors take these chips to the tops of large inclined oscillating screens which allow the suitable sizes to fall through onto a conveyor, while the larger pieces slide over a low dam down a chute to the rechipper or "hog" for resizing, whence they return to the screens. Fine particles of the nature of sawdust are blown out and go to the refuse-burning boiler house. The acceptable chips cross over to the digester house on a belt conveyor.

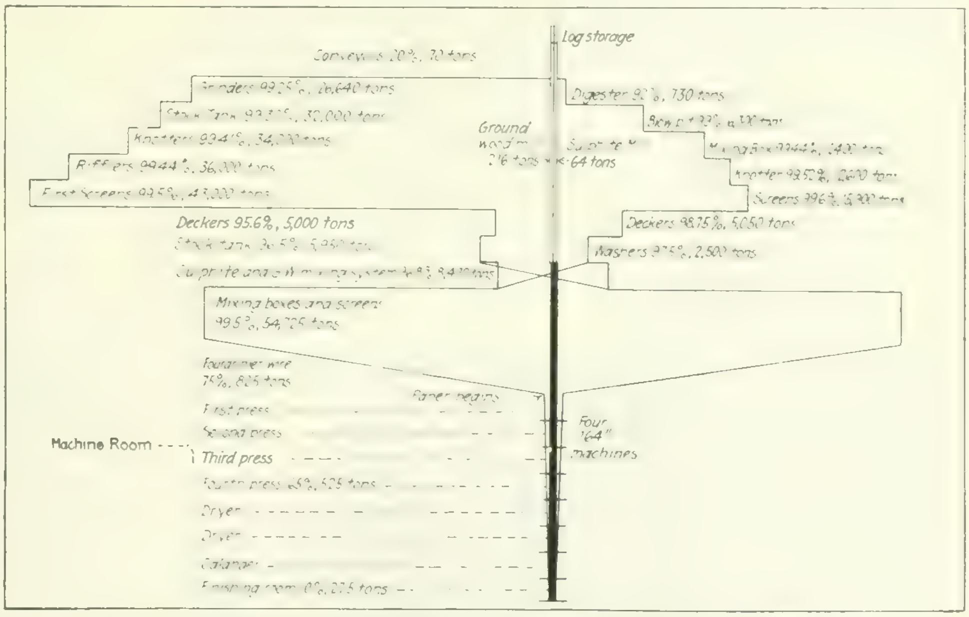
The washing drum and chippers in Table IV are of the wound-rotor type on account of the heavy starting duty. The drum may have to start up with a heavy load of logs in place, and the chippers are characterized by their flywheel effect, which imposes a heavy starting duty.

The chip bin is a huge steel-supported wooden trough just above the digester-charging floor with slide-controlled openings directly over the digesters. By swinging large funnels around on hand cranes, the chips can be discharged into the two digesters, each taking about twenty cords in twenty-five minutes for a feeding.

The "acid" building alongside is arranged for preparing and storing quantities of bisulphite of lime. This is made by first melting and then burning sulphur in rotary furnaces and combustion chambers. The resulting sulphur-dioxide gas is water-cooled and forced upward through high towers that are packed with limestone. A supply of water trickles down through the limestone and combines with the gas to form the bisulphite of lime, which is recirculated through the towers before being stored in huge vats.

The digesters are vertical steel tanks with conical tops and bottoms and lined with acid-resisting bricks and mortar. After being filled with chips about 25,000 gal. of bisulphite of lime is pumped in, taking twenty minutes.

Steam is admitted at the bottom, and the pressure gradually mounts to 70 lb., with a resulting temperature of 316 deg. F. The steam flow practically stops after two hours, but the "cook" is continued for over five hours, taking about 250 boiler-horsepower-hours per ton of air-dry pulp. The process of selective digestion lasts about eight hours and is for the specific purpose of removing the ligneous and resinous binders without harming the cellulose ($C_9H_{10}O_5$) fibers that go into the paper. At the end of the "cook" the contents of the digester are blown into a covered concrete "blow pit," which has a perforated bottom through which the waste liquor drains off to the sewer. The steam and gas fumes pass off through high baffled towers called vomit stacks, which are designed to prevent the escape of pulp. The pulp is now thoroughly washed in the blow pits for several hours until practically nothing remains but the silky unbroken fibers of cellulose.

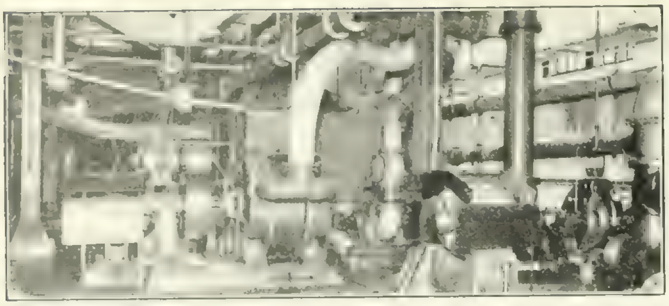

Log storage
Conveyors 20%, 30 tons
Grinders 99.25%, 26,640 tons
Stock tank 99.3%, 30,000 tons
Knotters 99.4%, 34,000 tons
Riffers 99.44%, 36,000 tons
First Screens 99.5%, 43,000 tons
Ground wood
216 tons
Sulphite
64 tons
Digester 92%, 730 tons
Screens 99.6%, 5,300 tons
Deckers 95.6%, 5,000 tons
Deckers 98.75%, 5,050 tons
Washers 97.5%, 2,500 tons
Mixing boxes and screens 99.5%, 54,725 tons
Fourdrinier wire 75%, 825 tons
Paper begins
First press
Second press
Machine Room
Third press
Fourth press 65%, 525 tons
Four "64" machines
Dryer
Dryer
Calender
Finishing room

Schematic Outline of the Production Process From Logs to Paper

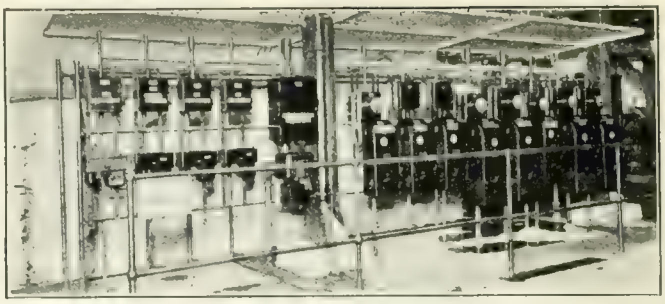
---

* Chief engineer the International Paper Company.

† Power and Mining Department, General Electric Company.



Motor-Driven Vacuum and Centrifugal Pumps are Required



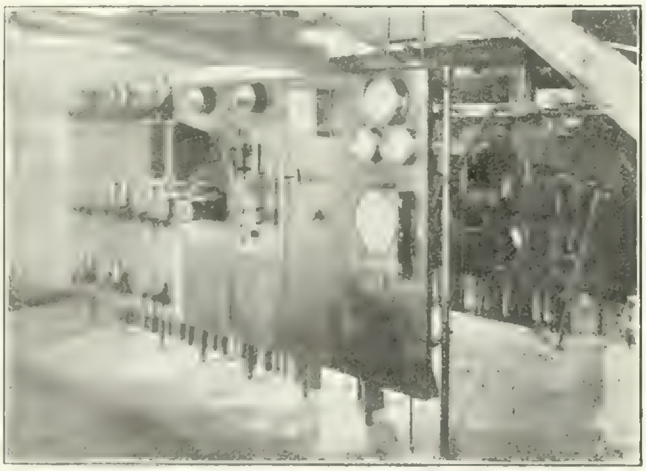
Compensators and Switches for Controlling Paper Machine Auxiliaries

When the stock leaves the digesters it is 92 per cent water, and it becomes 99 per cent water while being washed in the blow pits. It now goes to a 35,000-gal. stock tank, which stores up enough to convert the intermittent discharges from the digesters into a continuous process beyond the tank. Horizontal-shaft agitators in this tank keep the contents from settling.

From the tank a steady flow goes through a mixing box, which by the addition of white water from an extracting process further along doubles the volume. A rotary screen of the type called a knotter extracts the coarser clots and fiber bundles, and a still further refinement takes place in the improved rotary meshed-drum "first" screens, which pass only the individual fibers through very narrow slits. The rejected material from the knotters and first screens passes through a "second" screen, which returns the valuable portion to the main stream back of the first screens and sends the coarser parts to the wrapping-paper department.

The stock now cascades down five steep meshed thickeners into tanks in which revolve partly submerged screen thickener drums. The excess water falls through the inclined screens or passes to the inside of the drums, while the pulp adhering to the outside of the drums falls over dams and flows to the soft-stock tank below. The thickeners reduce the water flow from 2,900 g.p.m. to about 400 g.p.m., which leaves the stock about the consistency of thin porridge. The extracted white water goes to a tank, to be worked back into the system in various ways. The screens and thickeners are in a belted group drive with other miscellaneous machinery.

A sulphite soft-stock tank, with a capacity of 45,000 gal. is equipped with a horizontal-shaft agitator to prevent separation. A small addition to this stock comes from two inclined "save-alls" which give the white-water tank overflow a last screening before it goes to the sewer.



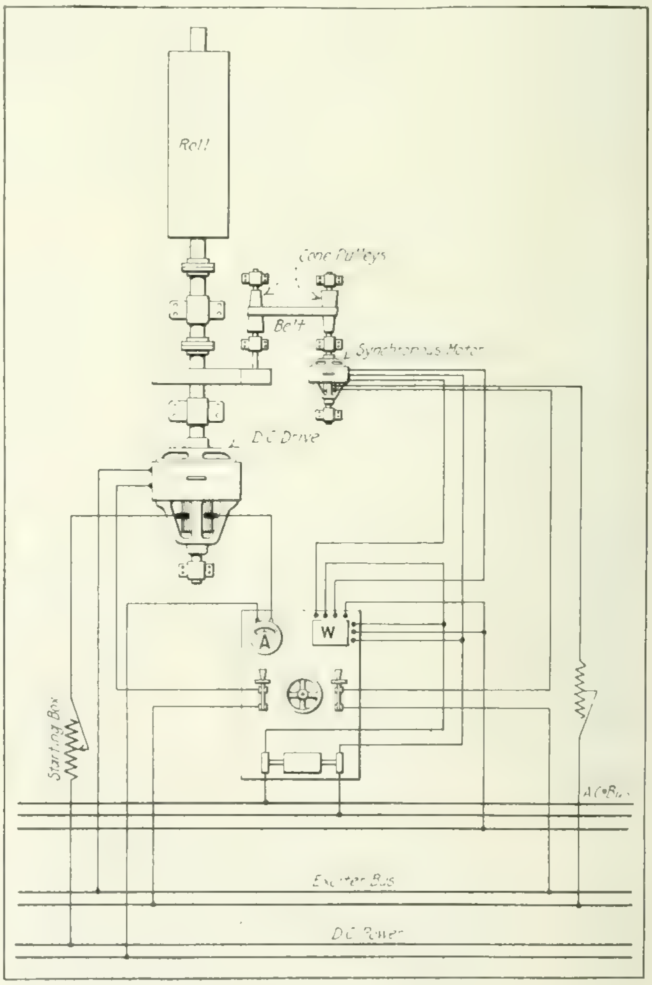
Front and Rear of Control Panels for Paper Machine Turbo-Generator Sets

It will now be expedient to bare the sulphite pulp at this point in order to bring the ground wood pulp up to a similar condition prior to mixing the two.

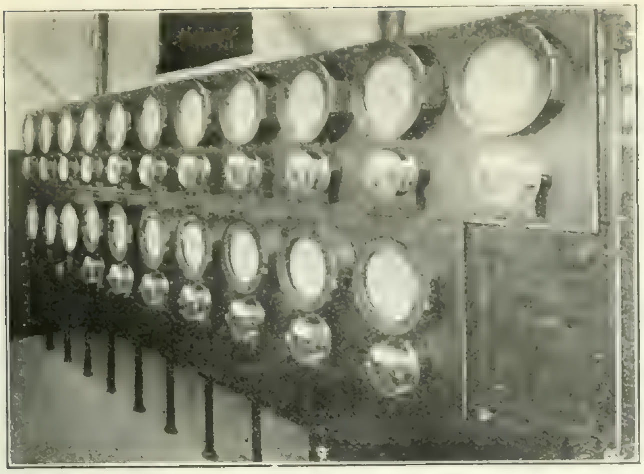
The Making of Ground-Wood Pulp

Interest in the ground-wood department centers about the grinders, for here is the heaviest draft on electric power and the greatest material transformation, all carried on with relentless energy and yet with just that skill and delicacy that produce unvaryingly the balance between quality and quantity which goes so far to uphold the mill's production record.

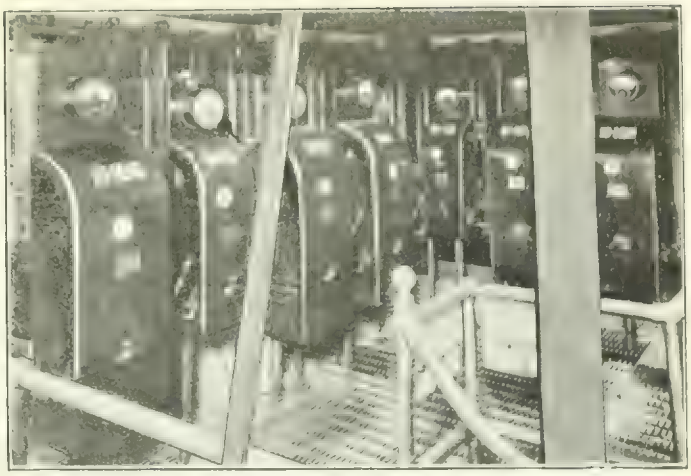
Six General Electric 2,400-hp., 2,200-volt synchro-



A Single Unit Schematic Diagram for Sectionalized Drive on Paper Machine



Eighteen Flow Meters are Electrically Relayed from Eighteen Departments Using Steam



Compensators on Gallery over Ground-Wood Pump Pit to Control Seven Pumps

nous motors, backed by their switchboards, oil-switch cells, starting compensators and exciter motor-generator sets, form the most imposing array of power in the mill.

These synchronous motors are designed to allow for a large leading power factor even at fractional loads. As their load far outweighs all the induction motors combined, the power factor for the mill is exceptionally high and is under control through field regulation of the synchronous motors.

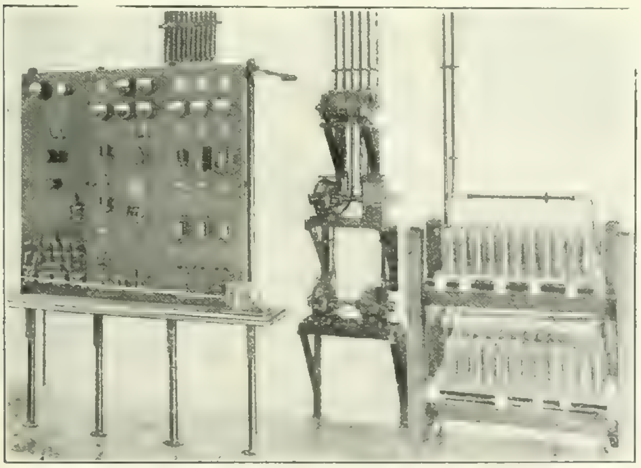
Wood grinding furnishes an ideal load for synchronous motors as the grinders have light starting load when the pressure is relieved. They have a constant load characteristic regulated by an automatic device, and the total load is so great that the power factor for the whole plant is kept at unity. It is of interest to note that the induction motor load alone has a power factor of 72 per cent.

These synchronous motors are started by reduced voltage-tap compensators, and the power factor is controlled on the individual motors by their field rheostats. The motors are designed for 72 per cent leading power factor and 96.2 per cent efficiency at full load.

Each 2,400-hp. motor is direct-connected to the end of a shaft that carries two grindstones 60 in. in diameter by 54-in. face, thus making twelve stones in all. The seventh set, which will make fourteen stones, is being installed.

The grinders are of the Waterous magazine type—i.e., the wood is fed into vertical chambers that reach to the charging floor, where they are kept filled from wood bins that are in turn kept replenished by the conveyer system. The 4-ft. logs are laid in the magazine parallel to the shaft, making two compact stacks per stone in the magazines with the stone between them at the bottom. The logs that lie alongside the stone on either side are forced against the stone by hydraulic pistons until they are ground away. When the pistons have completed their strokes, they automatically withdraw, allowing more logs to fall into the vacant spaces, when the relentless forward travel of the pistons begins again. The withdrawal of the pistons is accomplished by the low-pressure 50-lb. water system, while the grinding pressure is applied by the 190-lb. water pressure, using, however, only about 150 lb. in service.

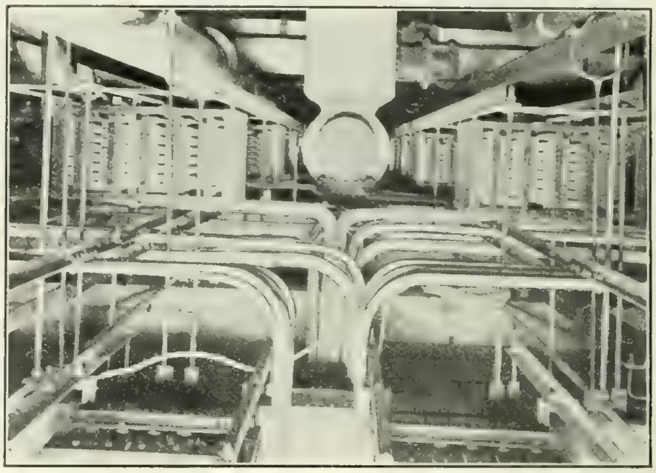
Without water the wood would burn and the stones would burst from heat; therefore some 6,000 gal. of white water is flushed over the twelve stones, serving to bring the ground wood away as pulp which is over 99 per cent water. Even so, the heat generated evolves a great amount of steam. This, however, is ejected by an ingenious system which leaves the department unusually clear. In the side of each magazine is a toothed



A 25-Volt Storage Battery System Energizes about 4,800 Circuits for Telephones, Fire Alarms, Watchmen's Stations, Etc.

Auxiliaries in the Sulphite Room Must Have Lead Fittings and Acid-Proof Construction to Prevent their Deterioration wheel which is turned as the wood sinks toward the stone, and registers the cords of wood ground.

Provision is made for burring the stones at regular intervals by means of a built-in hydraulic burring lathe, without interfering with production, and a light burring at three-hour intervals is said to give very uniform results. Each stone, consuming about 900 hp., grinds 17 tons of air-dry pulp per twenty-four-hour day, and the pulp is of such high quality that refining processes usually resorted to are omitted in this mill.



Resistors and Conduits Under Machine Room Floor. Dryer Jackets at Right and Left

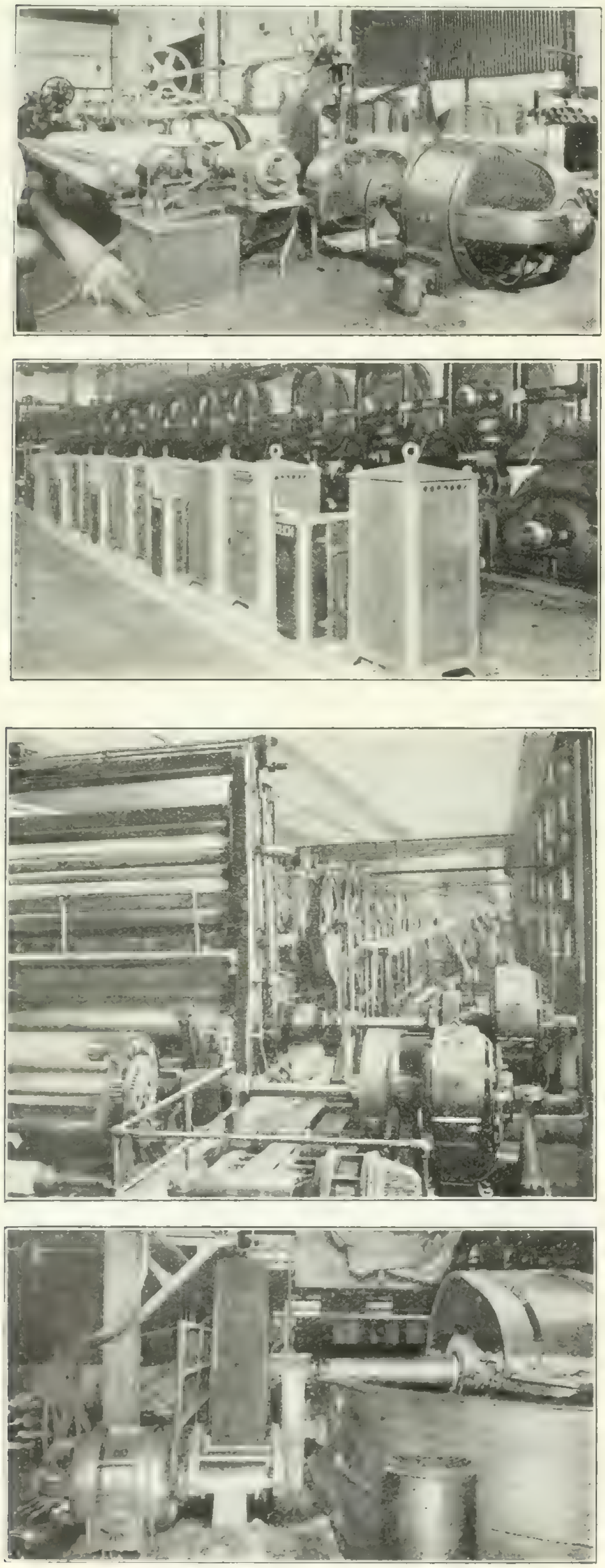
TABLE III—ELECTRIC MOTOR DRIVES IN PUMP HOUSE
(Total connected load, 1,862.5 h.p.; 550 volts, alternating current.)

Two 10-in., 2,000-g.p.m., 120-lb.-head fire pumps:	Direct; two 200-h.p., 1,200-r.p.m., squirrel-cage	G. E. *
Two 20-in. vertical 10,000-g.p.m., 35-ft.-head pumps, river to filters:	Direct; two 125-h.p., 514-r.p.m., squirrel-cage.	G. E.
One 16-in. vertical 6,000-g.p.m., 35-ft.-head pump, river to filters:	Direct; one 75-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 10-in. 1,800-g.p.m., 140-ft.-head pump, river to mill:	Direct; one 100-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 18-in. 10,000-g.p.m., 120-ft.-head pumps, filters to mill:	Direct; two 400-h.p., 1,200-r.p.m., wound rotor	G. E.
One 10-in. 4,000-g.p.m., 120-ft.-head pump, filters to mill:	Direct; one 200-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One filter washer and air pump:	Direct and chain; one 30-h.p., 900-r.p.m., squirrel-cage.	G. E.
Screen washer:	Gears; one 7½-h.p., 1,140-r.p.m., squirrel-cage.	C. W. †

* General Electric. †Canadian Westinghouse.

TABLE IV—ELECTRIC MOTOR DRIVES IN CHIPPER BUILDING
(Total connected load, 453 h.p.; 550 volts alternating current.)

Washing drum:	Belts and gears; one 50-h.p., 860-r.p.m., wound rotor.	C. W.*
Knife barker:	Belts; one 50-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor to chippers:	Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two chippers:	Belts; two 125-h.p., 690-r.p.m., wound rotor.	C. W.
Two chipper screens:	Belts and gears; one 50-h p., 860-r.p.m., squirrel-cage.	C. W.



Many Motors Operate the Paper Machine

Upper view: An alternating-current motor drives the slitter and a direct-current motor with speed control is used on the rewinder

Second view: Drum controllers and panel housings for wet end of a paper machine.

Third view: Each of the nine sections of the paper machine has its own motor drive

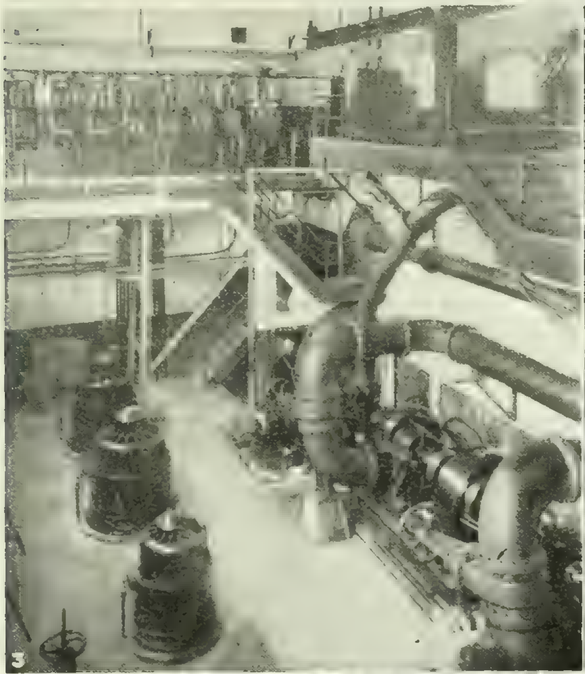
Lower view: Motor-driven broke beater for two paper machines using Lenix belt drive.

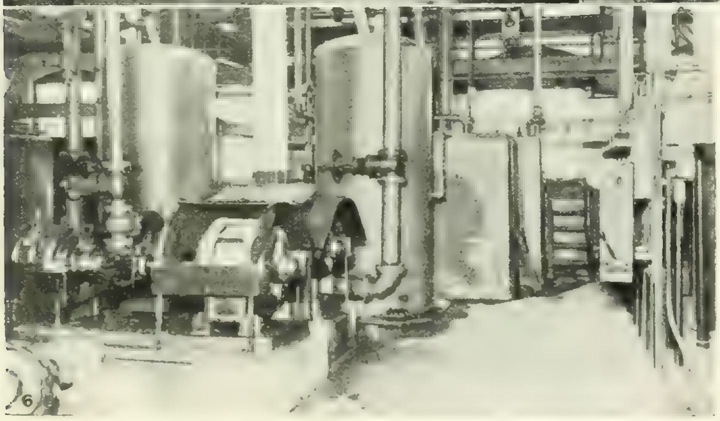
(to be continued)

Conveying Equipment and Water Pumping Station

No 1. There are over 3,000 ft of outside conveyors of the cable type This conveyor comes from the wood preparing plant. In the distance is a stacker.

No. 2 This "Jack Ladder" conveyor handles 16,000 logs per day from the river to the saws.





No. 3. In a pump pit below the river level motor-driven pumps furnish water for the filter plant and mill The control equipment is located above high water.

No. 4 A portable conveyor driven by a 15 h.p motor reclaims logs from storage and takes them to the permanent conveyor for delivery to chipper and grinder buildings.

No. 5. Group of five deckers, chain driven from a line shaft. Six of these groups of pulp thickeners are in the ground wood screen room.

No. 6. One of two pairs of high and low pressure pumps for the grinder hydraulic jacks. Compensators are shown at right.

INSTITUTE ITEMS

BARON BYNG A BOOSTER FOR BOOKS

The importance of the study of good books and the acquisition of ample theoretical knowledge, both regarding things pertaining to one's profession or business and things pertaining to life in general, was stressed by Lord Byng, Governor-General of Canada, in his address before the Young Men's Canadian Club, and reported as follows by The Star.

Baron Byng addressed his remarks particularly to the young men whose ambition it was to become a hard practical business or professional man, and quoting extensively from classic writers ranging from the apocryphal scriptures and the works of Marcus Aurelius to such comparatively modern philosophers as John Ruskin. He demonstrated that no young man could hope to become really practical if he did not give the full share of attention to the theoretical side of his business.

There had been recently a long orgy of addresses on the vexed question of education, His Lordship said, yet he felt that there was nothing that he could touch on so effectively as a phase of that same question.

He supposed that any young man, asked today what he wanted to be, would reply, "I want to become a good, hard, practical man."

If the word "practical" meant a man of skill and great ability, it was a high ideal, but often people felt that to be practical they had to discard theory altogether. The flaw in that line of argument was that theory was only other people's practice.

Many of the world's most practical men had put the outcome of their practice into writing. Therefore, it was a mistake to think that in order to become practical men they could afford to dispense with the theoretical learning to be got from books. Time was money, but so was health and knowledge.

Lectures at Canadian clubs were examples of the handing out of other men's knowledge and experience in tabloid form. But no amount of club lectures could ever replace the knowledge gained from the study of good books. They should not fail therefore to set aside a part of their day for the reading of good books.

Play the Game

The playing of games also had its important place in the life of the practical business man. But it should be playing, not watching. "I would sooner play any game, and I play them all, and all badly, than watch internationals play."

He felt it did him more good to play badly himself than to watch others play well.

"Let us all try as much as we can to play as many of them as we can. Then read good books. This is the high way to become a hard, practical business man, because your day will be full, your health and knowledge will be developed which is the way to become hard, practical business men."

There were busy people and lazy people in every walk of life. Ruskin spoke of the idle poor and the idle rich, busy poor and busy rich, and how the busy of one class viewed the idle of the other class and condemned the whole class accordingly. There was a working class amongst both rich and poor, and they were strong and happy because they were workers. His Lordship also quoted the Apocrypha on the same theme.

In conclusion, His Lordship expressed his pleasure at being with the young men and his whole-hearted desire to identify himself with the effort of the young men of Canada for their own and their country's betterment. He urged on them a careful consideration of the warning given to him in his youth by one of his monitors, "if you try too much to be theoretically practical, you may end up by being practically theoretical." They should strenuously avoid the temptation to so strain after the idea of being practical as to bring about in practice the very opposite result.

PROMOTION FROM WITHIN

How his company has developed a system of "promotion from within" was described to the Technical Association of the Pulp and Paper Industry on Wednesday by Harry P. Carruth, general manager of the Mead Pulp and Paper Company of Chillicothe, O. He said that the first requirement in developing a system of promotions was an analysis of the duties and relative responsibility of the men in every job in the mill. Each man's worth, as determined by his position, the number of men under him if any, the value to the company of his efficiency, or the damage possible through inefficiency, is arbitrarily determined, and a wage rating assigned in accordance with his value, this analysis going through the entire plant.

After the analysis is made, men throughout the mill are allowed to apply for examination in their particular branches, these examinations being oral and practical. The man who passes the examination with sufficiently high marks is then given an official rating as being a man of a certain title, such as machine tender, beaterman, etc., and is then available for a try-out in the next higher position when there is a vacancy. After try-out, he can take examination and be officially given the higher rating which he has earned.

The results Mr. Carruth said, were manifold, in increasing efficiency, avoiding labor turnover, and putting a personal interest in the job on the part of every man. The men are allowed to purchase stock in the company.

BOOK ANNOUNCEMENT

An announcement with table of contents and a portion of the index has been received for a book entitled "Intelligence Measurement" by S. C. Kohs. Besides an introduction and a preface by Dr.L.M. Terman, there are 305 pages in the book, including 50 graphs and 90 tables. The book is divided into three parts; the first covering the subject of the Physicology of Analysis and Synthesis. The second, the Block Design test, and the third is an appendix containing tables and typical records. The major part of the book is taken up with an explanation of the Block Design Test as a measure of the intelligence of an individual.

From the contents, it would appear that this book would not only be interesting but quite valuable to a person whose duty it is to estimate the mental capacity of individuals in connection with promotion or the assignment of responsibility.

Pulpwood operations in Quebec are faced with a serious shortage of freight cars. Dealers are forecasting high prices for wood, and bonuses are reported now for prompt delivery.

Aftermath of Swedish Strike

By O. G. MARELL

The Swedish pulp mill strike and lockout is settled. These welcome tidings were received during the First Paper Industries Exposition in New York during the week of April 9th. Exactly on what basis the settlement was made is not known at this writing, but cable messages state that a complete arbitration of the differences between the pulp mill workers and the mill owners has been concluded.

While this is most encouraging, the fact remains that the shut-down of the Swedish pulp mills already has had a far-reaching effect in the markets abroad as well as in America. Conservatives estimates put to the Swedish wood pulp production loss at about 200,000 tons, but this figure is generally considered too low. The lockout went into effect on February 1st., and approximately ten weeks of almost complete stagnation in production elapsed before the settlement was reached. The total normal production of the mills affected by the lockout is about 24,800 long tons, whereof 15,000 tons sulphite, 4,800 tons sulphate, and 5,000 tons mechanical pulp. Ten weeks production totals, accordingly, 248,000 long tons, or approximately 278,000 short tons, which is the amount of pulps of all kinds taken away from the world's market through the lockout since February 1st. Adding to this another 100,000 tons loss through the stikes during January we arrive at a total curtailment of 378,000 tons from Sweden's, production for the current year.

Immediately upon receipt of the news of the pulp strike in Sweden, the market, which already was in an upward movement, became still firmer, and this strong undercurrent increased steadily as the situation in Sweden became more and more aggrevated. Strong unbleached sulphite has during the last four months advanced from around $2.80 per 100 lbs., ex-dock, to $3.50, and Kraft is to-day selling at $3.35 to $3.40, with some small lot quotations as high as $3.50.

Taking the situation as it stands to-day, without consideration of what other factors may be brought into play during the balance of the year, the price trend is decidedly upward. The paper consumption is enormous, and the general prosperity of the whole country may be taken as an indicator that there will be no slackening in the demand for some time to come.

But there are also other factors that must be taken into consideration. Following in the wake of the Swedish lockout, a strike in the Norwegian pulp mills is threatening. In authoritative quarters it is stated that the Norwegian labor agreement does not expire before August 1st, as far as the pulp industry is concerned, but there are rumors that certain forces are working for a general strike in Norway to go into effect on May 1st. If this strike element should be successful, the pulp industry would no doubt also be affected, and an additional tonnage of wood pulp be taken away from the market.

Furthermore, reports from England indicate that there is a shortage in that country of some 100,000 tons of esparto grass, used by English papermakers in book paper. This shortage would have to be made up with easy bleaching sulphate, which would be an added strain on the already depleted resources.

A summing up of the situation must necessarily lead to the conclusion that a shortage and a serious shortage is imminent. For how long, no-one can foretell with any degree of exactness. But the papermaker is not particularly concerned about what is going to happen next year, or the year after that. The British long-term contract has never found adherents on this side, and the British themselves have abandoned the pre-war time contracts which they found anything but practical during the war years.

The question at this moment is what is going to happen during the balance of the current year. Is it wise to buy now sufficiently to cover for some months to come, or is all this talk about shortage and higher prices only a ruse on the part of the pulp mills and merchants who are eager to turn the Swedish labor troubles into gold for themselves?

It is doubtful that there can be more that one answer. But at the same time one should not forget that there is no cause for anticipating a repetition of 1920. The present year is not slated to be a year of panics, either in the pulp industry or in other industries. The lesson of three years ago is not likely to have been forgotten so soon by American men of business and finance. One thing, however, that could bring about something like a near-panic in the wood pulp industry would be the inauguration of a prolonged watchful-waiting policy on the part of the buyers. And it seems to be a fact that, in an upward market, the paper makers are, by virtue of custom or over-cautiousness, wont to "sit tight", until their stocks of raw materials run low, or the market all of a sudden starts to run amuck due to an aggravated shortage of pulp. Fortunately, this watchful-waiting policy is less pronounced to-day than a few years ago. And again we can look to the lesson of 1920 for the explanation. Paper makers have generally pretty well covered their needs of pulp by contracts. But there are many who have held off, buying a little with every price advance, expecting, or hoping that every level would mark the turning point.

There is a pronounced need that some logical and practical measure be taken to balance the present cycle of favorable development so as to eliminate the possibility of inflation and subsequent deflation. The best solution would undoubtedly be a sound buying policy on the part of the consumers, free from heavy speculation—a policy of buying in quantities that would insure adequate supply at a reasonable price average, and throw into the discard the drib-drab buying policy as well as these of overstocking.

Prosperity is welcome, but inflated prices are a curse which may well be avoided by a sane buying policy.

A. H. KENDALL

Manager Chicoutimi Pulp Co.

A. H. Kendall, master mechanic of Quebec district, Canadian Pacific Railway, has resigned from this company's service, having been appointed manager of the Chicoutimi Pulp Company, the Saguenay Light & Power Company and the Roberval & Saguenay Railway Company. He was banquetted at the Place Viger Hotel and presented with a handsome case of pipes by the officers of the Quebec district locomotive and power departments.

Technical Section

REVIEW OF RECENT LITERATURE

E — Sulphite Manufacturing

E-5. Process for Producing a High-Percentage Sulphite Pulp. E. Bronnert. Ger. patent 363,997. **Wochbl. Papierfobr.** 54, 396 (Feb. 10, 1923). The wood is given a preliminary cooking treatment with dilute sulphuric acid, about 1 per cent, under low pressure; customary cooking with bisulphite liquor follows.—J. L. P.

F—Alkaline Processes of Pulp Manufacture and Equipment

F-2. Process for Recovering Non-Cellulose Material in Waste Liquor. A. R. DeVains. Fr. patent 547,898. The organic matter is precipitated from the liquor by treatment with a halogen or with an acid. The precipitate is removed by filtration, and is either incinerated, subjected to destructive distillation, or gasified in a gas producer.—A. P.-C.

F-0. New Methods for the Disinfection and Refining of Plant Fibers. P. Waentig. **Wochbl. Papierfabr.** 54, 23-25 (Jan. 6, 1923). **Papierfabr.** 21, 49 (Jan. 28, 1923). A review of war-time and post-war developments in the sulphite and soda cooking processes, with brief statements in many cases as to their merits. Mention is made of the utilization of hemp, straw, and reeds for the manufacture of paper. Chlorine water and chlorine hydrate are less destructive in their action on fibers than chlorine, as in the Cataldi process. The use of carbon dioxide in a recently developed combined acid-alkaline bleaching process is briefly discussed.—J. L. P.

F-0. Production of Pulp by Means of Chlorine. B. Cataldi, assigner to A. Pomilio. Can. patent 226,002, Nov. 14, 1922. The material is subjected to the action of an alkaline liquor under pressure (first hydraulic and then steam pressure). It is transferred to an acid-resisting digester and then subjected to alternate treatments with chlorine gas and washings with water to cool the mass and remove the hydrochloric acid formed by the action of the chlorine. These treatments are continued until the temperature of the mass remains constant. The fibers are washed with clean water, subjected to a mild alkaline treatment at atmospheric pressure, and finally worked up as usual.—A. P.-C.

F — Refining & Treatment of Pulp

G-0. Refining of Commercial Wood Pulp. Ger. patent 302,523. **Wochbl. Papierfabr.** 54, 322 (Feb. 3, 1923). For the production of special papers and articles, wood pulp, especially sulphite pulp, is treated with caustic alkalies or sulphur-containing alkalies under pressure and simultaneous mechanical working in the absence of oxidizing gases and steam; subsequent treatment is given to prevent precipitation of dissolved substances on the fiber.

Ger. patent 302,524. (Addition to preceding patent). The pulp is prepared for the same purpose in a mechanical way, without chemicals, at a high density and temperature.—J. L. P.

K — Paper Making Process Equipment and Refining

K-4. Removal of Rosin, Fat. Wax, Etc., from Plant Material. C. G. Schwalbe. Ger. patent 363,666. **Wochbl. Papierfabr.,** 54, 396 (Feb. 10, 1923). Dilute alkaline solutions, 0.5 to 2 per cent, (as caustic soda, soda ash or ammonia) are employed at temperatures up to 65 deg. C. The extraction liquid is given a continuous or an intermittent motion. Ger. patent 363,667, addition to 363,666. Reducing substances, as sodium sulphite or thiosulphate, are added to the alkaline solution, previous to the extraction, to remove the oxygen.—J. L. P.

K-4. Production of Paper Stock from the Papyrus Plant. H. Steinhiller. Ger. patent 365,571. **Papierfabr.,** 21, 13 (Jan. 7, 1923). The process consists in treating the papyrus plant, prepared by boiling or retting, to a mechanical squeezing action, as by beating or rolling, and a simultaneous washing with water to free it from pith. The remaining fiber bundles are disintegrated in a mechanical way. — J. L. P.

K-7. Production of Material Suitable for Spinning from Disintegrated Birds' Feathers. Martin Jonas. Ger. patent 364,567. **Papierfabr.** 21, 14 (Jan. 14, 1923). Feathers which have been treated to remove all hard parts are added to beaten pulp, with or without an agglutinant, forming a very uniform mixture. This can be used on the paper machine for making spinning paper or spinning paper strips, or employed directly for the manufacture of spinning thread.—J. L. P.

K-7 Beater. O. Massart. Can. patent 225,312, Oct. 31, 1922. Same as Fr. patent 522,794. See **Pulp and Paper** 20, 818 (Sept. 21, 1922). **Paper Trade J.** 74, No. 18, 58, May 4, 1922.-A.P.-C.

K-7 Method of Beating and Mixing Paper Stocks. J. T. Murphy, E. J. Raney and J. L. Carey. Can. patent 225,527, Oct. 31, 1922. When paper is made from two different kinds of stock, one of which is present in much larger proportion than the second, the former is prepared in a (preferably continuous) beater, which discharges into a suitable chest (having about four times the capacity of the beater), from which it is sent to a second beater (either continuous or intermittent) where it is mixed with the other kind of stock.-A.P.-C.

K-7 Pulp Disintegrating Machines for the Manufacture of Paper. Anon. **Wochbl. Papierfabr.** 54, 247-248 (Jan. 27, 1923). Descriptions of the Strobach, Roabus Huber and Schaarmidt hollanders.-J.L.-P.

K-7 Refiner for the Manufacture of Paper. Robert J. Marx. Ger. Patent 366, 809. **Papierfabr.** 21, 58 (Jan. 28, 1923). Basaltic lava or a similar stone is used in the refiner.-J.L.-P.

R — General

R-12 The Relation of Costs and Industrial Engineering in Paper Manufacture. SANFORD E. THOMPSON, Thompson and Lichtner Co. **Paper Trade J.** lxxv, No. 24, 49-52 (Dec. 14, 1922). The author explains and discusses the complementary nature of cost accounting and industrial engineering, showing that the former merely tells when costs are high or low, while the latter shows why this is so and indicates the cure for defects and standardizes conditions of production. This is illustrated by well chosen examples such as estimating the cost of a new order, finding the most profitable lines, raising a department to a paying basis, etc.-A.P.-C.

THE WOODLANDS SECTION

FIRES KILL FREIGHT THORNTON DECLARES

OTTAWA May 5 — "If a man wants to add to the burdens of the Canadian National Railways, let him start a forest fire this year", says Sir Henry Thornton in a statement to the Canadian Forestry Association.

"The Forest is a main pillar of our freight business and tourist travel. I appeal, therefore, to every Canadian to protect the forests".

The lines of the Canadian National are the greatest carriers of forest products of any railway system in the world.

The latest record covering twelve months shows over 11 millions tons of lumber, pulpwood, logs, posts, ties and paper. This compares with 5 million tons carried by the Canadian Pacific.

The total traffic supplied by the forest to all Canadian railways for twelve months was in excess of 22 million tons.

No Canadian commercial interest is so intimately identified with the safety of the forests as a railway carrier. From the millions of wooden track ties, the score of thousands of telegraph and telephone poles, the fifty to sixty million feet of lumber for buildings and repairs, a modern steam road is a forest creature and cannot run a mile until it first has called on a timberland for essential supplies.

The future of the railroads is so intimately tied up with maintenance of the forests along their lines that experts look upon every forest fire in railway territory as having the most serious possible bearing upon their earning capacity.

With every timber tree taking on new value in a rising world market, the forest resources which the C.N.R. and C.P.R. tap throughout such a large part of their territory promise to develop freight traffic far beyond anything as yet realized. The "fly in the ointment" however is the fearful record of forest fires, most of them act by campers, fishermen, prospectors, etc. which are ruining the timber resources nine to ten times as fast as they are being cut. Although millions of tons of pulpwood have been cut and shipped on Canadian railway lines, probably nine times as much has been destroyed by human-set fires.

The sportman, the prospector, the settler and all other users of the woods have the power to maintain or destroy the future revenues of the railways from forest products. This does not take into consideration the menace of forest fires to tourist traffic for, after all, the tourist patronizes Canadian railways because of the lure of the woods and not to inspect our city streets or our factories.

A New Jersey farmer who started a brush fire that spread into a disastrous forest fire has been fined $400, the limit authorized by law, in one of the State's Courts.

GEN. J. B. WHITE TO LEAD CAVALRY

Brig.-General J. B. White, D.S.O. who was in charge of the forestry and woodlands operations of the Riordon Company, was elected vice-president of the Canadian Cavalry Association for the Military District No. 4 at the annual meeting Saturday night at militia headquarters. The election was unanimous.

Brig.-General White has a brilliant army record. He took the Forestry Battalion to France, and was later appointed Deputy Director of Forestry Services. He was awarded the D.S.O. in the Imperial forces for his work in connection with the forestry services in 1917, and in the following year was made an officer of the Legion of Honor by the French Republic, many of his Canadian forestry units serving with the French forces.

AIRPLANES TO FIGHT FIRES IN FORESTS

Ottawa, May 7 — Some changes are to be instituted in the operations of the Canadian Air Force during the present season. Instead of patrolling the forests with a large machine, the method to be employed involves patrol by single seaters. Furnished with wireless apparatus, once a fire is discovered instant communication may be had with the base with which a large machine carrying men and fire fighting gear can proceed to the scene.

The Air Force has done considerable survey and forest fighting work for different provinces during the recent years. The provinces pay the cost of operation plus a small appropriation for depreciation in the machines.

Last year Ontario paid a bill amounting at $38,000, Quebec paid $20,000 for such work and British Columbia $5,000. This work, it was stated would be willingly relinquished to commercial enterprises since the air force is quite sufficiently occupied in co-operating with the various federal departments.

DR. F. G. RAWLING JOINS U. S. F.P.L

Dr. Francis G. Rawling, Luke, Md., has joined the section of pulp and paper at the United States Forest Products Laboratory at Madison, Wis. He will assist with the alkaline pulping process investigations and numerous other problems. Dr. Rawling was formerly with the West Virginia Pulp and Paper Co. He is a graduate of Leeds University, England, where he received the degrees of bachelor of science, master of science, and doctor of science. He was an instructor in chemistry at the University of Edinburgh, Scotland.

After passing the examination for associateship to the Institute of Chemistry of Great Britain and Ireland Dr. Rawling was made a Fellow of the Institute. Dr. Rawling has been with the West Virginia Pulp and Paper Co. as research chemist and chemical engineer since 1913

Book Reviews

THE DESTRUCTIVE DISTILLATION OF WOOD, by H. M. Bunbury, M.Sc. (Bris.), B.Sc. (Lond), Associate of the Institute of Chemistry: Member of the American Chemical Society: Research Chemist to the British Dyestuffs Corporation. Published 1923, by Benn Brothers, Limited, 8 Bouverie Street, E.C., 4, London. 108 Illustrations, 115 Tables, over 300 pages, Bibliography and Index. Price 35s. post paid.

The Publishers' announcement reads as follows:

"The Wood Distillation Industry has been one of foremost importance for at least half a century. It was formerly confined chiefly to the United States, Scandinavia and the former Central Empires, but was also carried on to a greater or less extent in Russia, France and Great Britain. Its ramifications have now extended to Canada, Japan and Argentina. Among all these countries Great Britain was one of the first in the field; we can, in fact, boast one or two of the oldest firms engaged in this industry in the world. In spite of its long history, great development in recent years, its importance and universality, the number of text-books which have appeared dealing with the industry, and the amount of descriptive and technical literature of wood distillation are both extremely meagre. Only two text-books of any account have been written, viz. Klar's "Technologie der Holzverkohlung" and "Om Trakolning" by Bergström and Wesslén. The former is in German and the latter in Swedish. No book in the English language has yet appeared, a fact all the more remarkable when it is remembered that wood distillation has been practised in this country for well over a century and, further, that the foremost country in the industry to-day, viz. America, is English speaking. There is need, therefore, for an English text-book dealing with this branch of chemical industry.

The present book deals in a most comprehensive manner with the modern wood distillation industry, but in addition to this it claims to contribute materially to two other important subjects. First, there is the problem facing every chemical industry and increasing in magnitude and importance every day, the problem of the utilisation of waste products. In the present case, waste wood is the particular form of waste in question. The amount of wood wasted throughout the world every year in lumbering and logging operations, to say nothing of that produced by sawmills, is simply colossal. A minimum estimate exceeds a hundred million tons. Most of this is burnt or allowed to lie and rot. It is not, and never has been, suggested that distillation is a complete panacea for this appalling wastage. Nevertheless distillation could convert most of this waste wood into such valuable products as acetic acid, methyl alcohol, charcoal, wood turpentine, wood creosote and a host of other direct and derived products, such as acetone, pine oils, pine tar, acetates, methyl esters, formaldehyde, etc.

Not only so, but it has been amply demonstrated that waste wood can be successfully gasified for the production of power and illuminating gas. Many large commercial concerns are now deriving all their power from wood. Further, the fuel question, especially smokeless fuels, is intimately bound up with this problem.

Secondly, there is the problem of destructive distillation in general; it is a method of chemical decomposition and reaction of fundamental importance in many chemical processes. One need only mention the coal gas industry and the "cracking" of oils. Not the least important information in the present book is the detailed account given of the process as applied to cellulosic materials, including the results of the latest research and the views of the most authoritative workers in this field.

Since wood is the basic raw material dealt with, the chemistry of wood is treated in a comprehensive survey that includes the most recent work on its constitution carried out by such well-known investigators as Klason, König, Schwalbe and Schorger.

The very latest developments in wood distillation plant and operating practice are described with particular reference to all essential details of construction and the theory underlying the working and operation of the various plants. No effort has been spared to illustrate everything described in the text, and the book is replete with photographs, sectional drawings, diagrams, graphs and flow sheets.

The references to the literature of the subject are very complete. All the results and data which have appeared in such literature—academic, technological, statistical, and patent — and which have the slightest value, have been set out in over a hundred tables.

It may safely be presumed that the book will prove of extreme value and interest not only to those engaged in the destructive distillation of wood in its various branches, but also to those in other industries in which wood is used as a raw material, as well as to those engaged in research on cellulose and allied substances.

REPORTED ON McLACHLIN TIMBER

The James W. Sewall timber cruising organization of Old Town, Maine and Washington, D. C., is completing the final office work on a detailed cruise and estimate of some 1,000,000 acres of land belonging to McLachlin Brothers Ltd., of Arnprior, Ontario.

The work has taken upwards of 2 years, and has been very thorough and complete. All boundary lines of the various properties have been re-surveyed, and new interior lines for purposes of mapping control run parallel with each other at 2-mile intervals. Cruisers have gridironed the property between these control lines, travelling at close intervals, mapping the country and estimating the timber.

The results of the survey and exploration have been systematically set forth on standardized sheets and maps, filed with the owners at Arnprior. The system is so thorough that any location on which information is wanted, may be turned to in two minutes, and the maps thereof, as well as the estimates of timber and local report, be on the executives desk immediately.

TO RENEW FORESTS

Brockville, Ont., May 5. — For the purpose of encouraging reforestation throughout Eastern Ontario 300,000 pine seedlings are being planted at the farm of the Kemptville Agriculture School, to be available for distribution to farmers next year. Upon ground belonging to the farm which is unfit for cultivation, 13,000 small trees, including pine, walnut, butternut and soft maple, are also being planted in co-operation with forestry branch.

PULP AND PAPER NEWS

Messrs. G. Chahoon and Ellwood Wilson of the Laurentide Company Ltd., attended a directors' meeting of the Canadian Forestry Association held in Montreal.

Following the example of other paper companies, the Brompton Pulp and Paper Company have advanced the rate of wages five cents an hour.

Mr. E. L. Crooker, manager of the Canadian Export Paper Company, Limited, has returned to Montreal after a visit to New York and Atlantic City.

The St. Lawrence Paper Mills, Limited, Three Rivers, P.Q., started up their second newsprint machine last week.

The offices of the Montreal branch of the Provincial Paper Mills, Ltd., have been removed from room 302 to room 803 McGill Building.

A fire broke out on the premises of the Kander Paper Stock Company, Limited, William street, Montreal on the evening of May 4, causing damages estimated at about $13.000. The fire started in a courtyard used for receiving loads of waste paper, and soon spread. The damage is partly covered by insurance.

Mr. S. J. B. Rolland, president of the Rolland Paper Company, Limited, Montreal left for a trip to Europe on the 12th inst. He was accompanied by Mrs. and Miss Rolland.

The Eastern lumber trade is still buoyant, with a very good business passing. The orders for American account continue to come in at a good rate, the great difficulty being to secure suitable stocks of both soft woods and hardwoods. Most of the mills are sold up with dry stocks. A large quantity of the new cut has been sold at substantial advances. There is a possibility that the market will drop when the new cut is available, but to what extent is the problem which is now facing the trade.

T. H. Preston, of the Brantford Expositor, is the new President of the Canadian Daily Newspaper Association and J. M. Imrie, of the Edmonton Journal, is Vice President, being elected at the annual meeting in Toronto during the past week. The principal speaker at the banquet, which was held at the King Edward Hotel, was Don C. Seitz, business manager of the New York World, whose address aroused much interest. He said that in the United States the process of commercialization of newspaper has proceeded with great rapidity during the past few years. One publisher alone owned twenty-two daily newspapers and other chains and groups were springing up in all sections. These huge organizations were created but for one purpose the getting of money. Therein lay the probability of disaster "and," added Mr. Seitz, "if you submerge your public organs in money, there can be only one end—disaster and the destruction of liberty. I strongly advise you as newspaper men to strive against this flood of commercialism."

The Interlake Tissue Mills, Merritton, Ont. has put on the market a new Interlake Household bleached tissue paper towel, of special size. Each roll contains three hundred towels of the proper size for roughing out pots, polishing glass and silverware, wiping up liquids, grease from fried foods, etc.

W. B. Carmichael of Carmichael and Co., Limited, who are large paper dealers in Sydney, Australia, is on his way to Canada and will confer with several mills in regard to doing a greater export business with Australia and New Zealand.

The Thorold plant of the Provincial Paper Mills, Limited, is now connected direct with the water works system of Thorold and a clean, pure supply of water is assured for the making of book and writing papers. The supply was formerly obtained from the canal but has not been found suitable for paper making purposes.

W. F. V. Atkinson, of Toronto, left this week for the Godbout river, on the lower St. Lawrence where he has entered the service of the St. Regis Paper Co. of Canada, whose headquarters are in Montreal. The Company will purchase large quantities of pulpwood from settlers for shipment to its plants on the American side and Mr. Atkinson will have charge of the construction of docks, booms and other work in connection with the handling of the wood.

Fred W. Halls Paper Co., Limited, Toronto, have been appointed selling agents for Parkdale covers and folders. This is a new Made-in-Canada cover paper and is stocked in two weights, ten colors and white. Plate and linen finishes are carried at the mill.

W. H. Sherriff, of the Hodge Sherriff Paper Co., Toronto, left recently on an extended business trip to Western Canada and will visit all the principal cities as far as Vancouver. He will be absent until the end of May.

Arthur Hobson, who for the past two years has represented the Howard Smith Paper Mills in Winnipeg, has returned to Toronto and is now attached to the Ontario sales force. His many friends in the trade are pleased to welcome him back.

B. Y. Brewster, representing British Esparto Papers, Limited, Montreal, was a caller on the trade in Toronto during the past week.

John Hewitt, President of Paper Sales, Limited, Toronto, has returned from a month's business trip to Vancouver and other cities in Western Canada and reports that the prospects for increased trade in the paper line during the coming season are bright.

The Rolland Paper Co., Montreal, have sent out to the trade "stuffers" of their Superfine Linen Record, on all rag, loft dried, bond paper, which the company has been manufacturing for forty years. It is made in white, azure and buff, in a large assortment of sizes and weights.

George Davidson, sales manager of the Howard Smith Paper Mills, Toronto has returned from a trip to Asheville, N. C., accompanied by Mrs. Davidson who has been spending some time in the south and come back much improved in health.

John Ebbels, representing the American Writing Paper Co., Holyoke, Mass, was a caller upon the paper trade in Toronto during the past few days.

C. E. French, who for the past two years has been a member of the sales staff of the Howard Smith Paper Co. in Toronto, left last week for Montreal. He has been appointed export representative of the firm and will depart shortly on an extended tour to various foreign countries in the interest of the overseas trade of the organization.

David F. Robertson, of Montreal, general manager of Canadian Paperboard Co., spent a few days in Toronto lately. All the plants of the company are running to capacity at the present time.

A provincial charter has been granted to the Planet Printing Co. Limited of Chatham, Ont. with an authorized capital stock of $100,000, to do a general printing and publishing business and to deal in paper boxes, stationery etc. Among the incorporators of the company are Sydney Stephenson, Robert W. Angus and Albert J. Owens, all of Chatham. The new company will take over as a going concern the printing and bookbinding business now carried on in Chatham by Sydney Stephenson.

Official announcement has been sent out to the paper trade by the Continental Paper Products Limited, Ottawa, of which Herman Elsas is President, that J. H. Wright has resigned as manager of the company and H. A. Miller of Ottawa has been appointed as Secretary-Manager. An administrative Committee has been appointed, composed of H. A. Miller, Ottawa, J. A. Nixon, Montreal and J. E. Dennie,Toronto, which will hold meetings every Saturday in Ottawa.

James Thompson, ex- M. L. A., Toronto, who is a member of the Thompson and Heyland Lumber Co. handling large quantities of pulp wood, delivered a stirring address before the Kiwanis Club of West Toronto last week on the need of improved forestry methods and greater precautions form forest fires if Canada was to retain her natural wooded wealth unimpaired. He contrasted the forestry methods of several countries in Europe with those prevailing in Canada and called for a more aggressive policy at home.

The Spruce Falls Co., of Kapuskasing, have taken out 75,000 cords of pulpwood during the past season and all the digesters of the plant are operating to capacity. The company last season built nearly 60 houses at Kapuskasing and this summer will put as many more dwellings. About half of the company's pulpwood is now at the mill and the remainder is being brought down with the spring drives.

The Beacon of Stratford and the Herald of that city have been amalgamated and thus another Ontario city will be served by one daily publication. There are now very few cities in the province with more than one daily.

PRICE BROTHERS EARNED 2.85 P. C.

Quebec, April 25.—The annual report issued by Price Brothers & Company, Ltd., for the fiscal year ended February 28th, 1923, was mailed to the shareholders of the company this afternoon. The report shows that the profits for the year were $2,338,933 and to this sum is added $341,346, the balance brought forward from the previous period, thus making a total of $2,680,280. Earnings were equal to 2.85 per cent. on the common stock outstanding.

From this amount was deducted a sum of $1,973,736, leaving a net balance to be carried forward of $706,544. The deductions made from the profits of the past year and the balance brought forward from the previous year are as follows:

Bond interest and sinking fund requirements $419,976; allowance for depreciation of the company's properties and depletion of timber limits, $700,095; distribution among shareholders of dividends totalling two per cent., $853,664.

PLANS FOR SUPERINTENDENTS' MEETINGS

Three divisions of the American Pulp and Paper Mill Superintendents' Association have meetings scheduled for May and June. The Northern Division meets on May 23rd at Bangor, Me. Walter S. Rooney of the Albany Felt Company, Albany, N. Y., will address this meeting on the subject of Felt Manufacturing and the Paper Industry in Japan. Mr. Rooney will also speak on the same topics to the pulp and paper students of the University of Maine at Orono on May 24. The Northern New York Division of the Association will hold its spring meeting June 20, probably at the Woodruff Hotel in Watertown, N. Y. May 18 and 19 have been decided upon as the dates for the spring convention of the Northwest Division, and the scene of the meetings will be Port Edwards and Wisconsin Rapids, Wis. The Technical Association of the Pulp and Paper Industry has been invited to meet with this Division and the managers of the seventy-five or more mills represented have also been invited, so it is expected there will be several hundred visitors in the two Wisconsin mill towns during the two days of the meetings.

CRUISER NEARLY DROWNED

A narrow escape from drowning by the chief cruiser of one its field parties in Nova Scotia has just been reported to the New York Office of James D. Lacey & Company.

Mr. G. L. Knapton of Lawrence, Mass., was the man who nearly became a victim of the treacherous ice in the north woods during the spring breakup. While crossing one of the large lakes a bad spot in the ice sent Mr. Knapton into the water. He was able to kick himself loose from his snowshoes because he uses the Indian snowshoe hitch designed for emergencies of this kind. His companion, Mr. George Snowden of Forest Hills, Long Island threw himself flat upon the breaking ice, and by extending one of his snowshoes Mr. Knapton was able to pull himself to the firm ice on one side.

They hurried to the shore and quickly built a fire which forestalled the consequences which are likely to follow an accident of this kind with men who are less hardy or not inured to the exposures to be met with on winter cruises in the north.

Mr. Knapton's experience as head of Lacey cruising parties has been very extensive. He was one of the men with the Northern Quebec party from the same office which was 16 days "mushing out" to a rail head in February 1921.

BAY SULPHITE CAPITAL UP

Supplementary letters patent issued to the Bay Sulphite Company provide for an increase of capital from $3,500,000 to $8,000,000 by the creation of 45,000 additional common shares of $100 each. According to official notice by the company, the number of directors is increased to nine in accordance with a by-law adopted on March 10, by the board and sanctioned by the shareholders on April 16.

CATALOG RECEIVED

The Pulp & Paper Magazine is in receipt of a new condensed catalog of power transmission equipment made by the Medart Co., St. Louis, Missouri. This bulletin, which is No. 43, contains descriptions of a number of specialities, and will be sent on request.

HIGH PRODUCTION COSTS PREVENT EXPORTING

By B. T. McBAIN, Asst. Gen. Mgr., Nekoosa Edwards Paper Co.

Now that England has arranged with Uncle Sam for the liquation of her war debts and England in turn is now asking France to pay up, while France is doing her best, by means fair or foul, to collect from Germany, we in America all sit back very calmly and watch the passing show.

What are these foreign nations doing? In addition to the taxes of pre-war days, they are burdened with every known brand of tax and license almost to the point of confiscation of one's property; yet, whether willingly or not I cannot say, they are facing the music, swallowing the bitter pill and making the best of it.

These foreign nations, during the World War, learned one thing we did not learn — economy. They not only learned it but practised it during the war of necessity. Today they are even in worse condition, some of them, than during the war and what was economy then would be termed extravagance now. In other words, they are now practising super-economy, if there is such a term.

The markets of the world are open to us, yet our costs of production in many lines, and particularly pulp and paper, are so great that we cannot name a profitable price for export business that will command the orders. Why? Because our mills are not operating under economy principles. They may be producing cheaper than during war times, but many of the extravagant conditions heaped upon manufacturers during that period are still found in almost every locality.

Taxes were high during the war. Everyone expected them to be, but they are not only high still, but in many places are on the increase. School boards, city councils, county boards, government and commissions of all kinds learned that it was easier to do business with a large amount of money in the treasury than under the saving and economy rules of pre-war days. These boards still ask for the large sums of the extravagant time and are getting them. The result is higher taxes and in most cases poorer management in public affairs.

But, bringing the fault right down to our own doors, where we can look upon the question with eyes open, I will say that mill officials, boards of directors and stockholders are in the same boat.

Many trimmings were added to the mill organizations during the war and profitable business days, trimmings that could be counted as expense, legitimate of course, and chargeable against the cost of manufacture. The cost of manufacture was increased but the selling price went higher and the profit was enough usually to pay a decent dividend on the investment, many times greater possibly, than the capital stock.

But, those days are gone. The profit is nil, the cost of production high and there is need for reduction of every item that goes into the cost of manufacture. It does not take a large amount of saving per month in many plants to equal one dollar per ton of product and if everyone will look over what his expenses were before and what they are today, item for item, many will find part of the trouble is with these departments higher up.

If American pulp and paper manufacturers are to be in a position to compete and do business in the markets of the world, Americans must learn the lessons of economy and practice them as our foreign cousins are doing, for while their taxes are high, and must of necessity remain so, they have learned the other more important lessons of economy taught them by the long days of want, that there be no waste and that every possible by-product be gotten out of every raw material.

In the pulp and paper industry today in Germany and in other foreign lands, enough chemicals and oils are extracted from the wood, as well as from what is waste in America, to equal a profit on the investment, even though the original product is sold at cost or even at a loss. Besides, they are getting as nearly 100 per cent. out of their wood as is possible to get by the most up-to-date scientific chemical control.

America must needs look to her laurels, if she is to remain at the top in the Pulp and Paper Industry. Wake up!

TAYLOR IS INDEPENDENT

Howard S. Taylor, formerly Vice-President and Chief Engineer of The Management Engineering And Development Company, of Dayton, Ohio, has withdrawn from this firm and commencing May 1st, and will carry on independently a general engineering practice dealing in Pulp, Paper, Fibre and Power in both Canada and the United States.

Mr. R. W. Leeper and Mr. H. T. Baker are accompanying Mr. Taylor in the make up of his new organization, the former as Power Engineer and the latter in charge of general design. Mr. Leeper is well known to the industry, having had experience with all phases of Pulp and Paper mill power requirements.

Mr. Taylor heads his organization formed a year ago with offices in Montreal, Quebec, as formerly, and his American headquarters will be located in the Jefferson Street Arcade, Dayton, Ohio. Mr. Taylor feels that Dayton, besides being an ideal city, is an excellent business center and that it is a very suitable location for a first-class independent Pulp and Paper Mill engineering organization, situated in the midst of a fast growing paper making district.

Mr. Taylor has carried on this work under his own name in Montreal since the inception of this Montreal office, and will now follow similar procedure as regards the Dayton office, the address being H. S. Taylor, Jefferson Street, Arcade, Dayton, Ohio.

STRATFORD PAPERS MERGE.

Stratford, Ont.,— Announcement has been made of the amalgamation of two Stratford daily newspapers, the Beacon and the Herald, to be known hereafter as the Stratford Beacon Herald.

Application has been made for a charter for a company with a capitalization of $150,000. The officers of the company are as follows: President, W. J. Taylor, Woodstock; Vice-president, L. H. Dingman, St. Thomas; managing director, Charles Dingman, Stratford; additional director, W. F. Tobey and Archibald Thomson.

March timber in the form of logs in the St. John River are in danger of being carried out to sea by reason of the flood conditions in New Bruswick.

UNITED STATES NOTES

Floyd L. Carlisle, president of the St. Regis Paper Company, has been examined for life insurance, the total amount of which will rank among the largest ever taken out on an individual life. Though the details of the matter have not yet been completed, the tentative sum set as adequate protection for all the interests concerned is $3,000,000, of which $2,000,000 has already been definitely decided upon.

Approval of plans for permanent logging operations on 45,000 acres in the Owen's River Mono Lake working circle of the National Forest was announced last Friday by the United States Forest Service which said the area contained a stand of timber estimated at 560,000,000 board feet. It is planned to cut the forest over twice during the next 140 years, a sustained annual yield during the first seventy years of seven million board feet having been forecast.

H. J. Lilleston of the Paraffine Companies, Inc., San Francisco, a concern operating sixteen plants supplying fibre cases to the leading canners and packers of the Pacific Coast, declares that fibre cases, despite dissatisfaction in some quarters, are carrying certain merchandise every bit as satisfactorily as wooden cases, and at a great saving in packing cost and freight. It is no longer a matter of "guess" in this connection for fibre cases are being widely used by canners and packers with great success. In other words, the present day fibre case has made good. As an evidence of Mr. Lilleston's firm's conviction that this is so, it is packing its paints in fibre containers. Mr. Lileston's suggestion to canners and packers is that they would assure their cashing in on the many economies and advantages of fibre cases if they made sure to use the proper weight, size and construction in cases so as to fit particular needs.

Freshets and floods in New England last week wrought considerable damage to industries, railroads and business. Central, eastern and northern Maine suffered most, the lowest estimate of property loss in this region going as high as $3,000,000. Business and industry along the Maine rivers was forced to suspend temporarily, throwing tens of thousands out of employment. Production was curtailed at the Cushnoc Paper Company mill in Augusta. Difficulties were encountered by other paper plants on the Kennebec, but generally such plants were more fortunate than the cotton mills along the river. It was to prevent such damage by floods that the power using corporations of the Kennebec Valley petitioned the last legislature for permission to establish a large reservoir at Dead River. Their petition was denied on account of Governor Baxter's opposition.

The Alger Box Company's factory, Gardiner, Me., was destroyed by fire last week with a loss of $100,000, partially covered by insurance. Company officers have announced that the plant will be rebuilt unless a new one is purchased in the vicinity of Gardiner.

Directors of the Warner & Childs Co., Medford, Mass, manufacturers of corrugated boxes, have elected R. M. Taylor president and treasurer. Mr. Taylor was formerly purchasing agent for the Hinde & Dauch Paper Company.

A publicity campaign to educate the housewife and the retail grocer to use sanitary food containers instead of the ordinary paper bag is being launched on a nation-wide scale by the Victory Bag and Paper Company of Marinetta, Wis. During the next two and a half months the company's ads will appear in about fifty of the leading newspapers throughout the United States.

The Victory management wants to put over the idea that in order to properly protect what is known as a "paper bag" and keep it sanitary and clean, it should be packed in fibre containers instead of the ordinary way of wrapping with paper and string.

The mills of the Charleston Paper Manufacturing Company at Nitro, W. Va., which have been under construction since last August, have been completed. Paper making operations were begun about three weeks ago. About 25 tons of paper a day are being turned out by the machine now in operation, a 92 inch Fourdrinier. A cylinder machine, now being installed, will be ready for use about July 1. It will have a capacity of between 40 and 50 tons of box-board a day. The location of the mill gives it shipping facilities over three rail lines, and its coal supply is drawn from the mines but three miles below the mill.

Return to the pre-war practice of annual appropriations for land purchases instead of forestation was urged on President Harding last week by a delegation header by E. H. Baker of Cleveland, Chairman of the Forestry Committee of the American Newspaper Publishers' Association; R. S. Kellogg of New York, Chairman of the National Forestry Program Committee, and Milton L. Marcuse of Richmond, Va., representing the American Paper and Pulp Association. The delegation, presented by Senator Lodge of Massachusetts, asked the President to have included in the next budget an appropriation for $2,000,000 to purchase lands on the headwaters of streams where forests may be grown and reforestation of these lands. Authorization for such an appropriation, the President was told, exists in the Weeks Forestry Law.

The International Paper Company has removed its offices in New York City to quarters in the new Pershing Square Building, 100 East 42nd Street. This move was prompted by the general exodus of large business houses to the center of the city.

President Norbert A. Considine of the Paper House of Pennsylvania, sailed from New York last Thursday for London. He is planning to visit mills in Finland, Scandinavia and in Germany. Mr. Considine's trip is for the purpose of making further arrangements in connection with the importation of the foreign newsprint which is now being used by each of the Philadelphia dailies for some part of all of their editions. President Edward A. Hemingway of the E. A. Hemingway Company, Philadelphia, paper stock dealers, also set sail last week for an extensive trip through the former warring countries of Europe. On his return Mr. Hemingway will go direct to his lodge in Canada.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 8. The month has opened with a slight improvement in the local paper trade. This is in line with general commercial conditions here. The general tendency in the paper industry is towards a broadening of activities, although there are weeks when business is quite dull. The continued slackness in the printing section is a weak spot, and the outlook is by no means good, in view of the usual falling off in printing orders during the summer months.

There is every indication that the demand for newsprint will be sustained for a considerable period. The American publishers are increasing the average number of pages — in March it was 28 as against 26 in February; while advertising is broadening, the March figures showing an increase of 25 per cent over February, making them the highest recorded for the month of March. For the first quarter of this year advertising was 10% ahead of that of the first three months of 1922. Under such conditions, the consumptions of newsprint has naturally advanced, being in March 10% greater than in March 1922 and 33% greater than in March 1921. Canadian mills are speeding up production to meet this situation. For the first quarter of the year it was 298,093 tons, a gain of 52,408 tons or 21 per cent over the first quarter of 1922. The rise in our exports will be seen from the following:

	Total	To U.S.A.	Other Cts
First Quarter 1923	280,634	271,328	9,306
First Quarter 1922	233,626	217,351	10,255
First Quarter 1921	185,950	166,893	19,057
First Quarter 1920	192,265	168,046	24,219

Shipments to Canadian customers were 10,513 tons in March bringing the total for the first quarter to 27,833 tons compared with 27,141 tons for the first quarter of 1922.

For a considerable time there has been talk of higher prices in book and writing papers, in consequence of increased production costs. The American Writing Paper Company has given a lead in this direction, advancing certain book lines $5 per ton. Although Canadian companies do not invariably follow the examples of those over the border, it will not be a surprise if in this instance mills here also put up their prices in book and fine papers. The mills, as a rule, are fairly busy. The orders for light weight papers are coming in at a good rate. Wrappings are in steady demand at the old values, while boards are inclined to be on the slow side. Paper stock is still firm, with waste paper commanding a ready sale and rags in steady request.

With regard to pulp, the demand for groundwood is quite good, and many inquiries are coming forward. Canadian stocks on hand are small. The price is weak, but with the advance of the season and the streams get lower, the chances are that quotations will advance. Sulphite is steady, with a fair call, while bleached continues to be a firm market, the buying still being of satisfactory volume.

ONTARIO MARKET NEWS

With the advent of May, business in the paper line has picked up considerably and jobbers report a considerable improvement over the previous month which went rather flat after the Easter holidays. With the continued fine weather it is expected that orders will now come in more freely. Consumers have not been purchasing until they have been right up against it for stock and then they wanted rush deliveries. Some wholesalers attribute the prevailing state of suspense to the awaiting of the announcement of the Budget at Ottawa, which is holding many lines of business in abeyance, and the fact that other business concerns have been busy attending to the making out of their annual statements for the payment of income and business taxes, etc.

The call for kraft has fallen off slightly and cover paper demand is rather quiet due to the general slackness of the printing trade, which, it is hoped, will soon revive. Requisitions for tag manila, card index, bristols, etc. have shown some improvement during the past few days. Envelope manufacturers and large stationery firms are not rushed at present.

The prices on all ranges remain firm and there is now no talk heard of any immediate advances. Paper box plants are only fairly well employed but board mills continue active.

The only recent revision in quotations is an advance of five per cent in printers' blanks. One firm during the past week advanced tissue papers about ten per cent but other producers have not followed suit. The demand for the product has been rather quiet owing to the slackness of industries using large quantities of tissue.

The market for newsprint keeps up well and, although there are more consolidations of daily papers in Ontario, it is not expected there will be any diminished requisitions for print paper as bigger issues will be put out. Owing to the advance in wages granted by several large mills to employes, it is declared that an advance of five dollars in the price of news may go into effect in the near future. Costs are climbing all the time and every effort will be made to take care of them.

The pulp market is moderately active and prices are about the same. Ground wood is plentiful and shipments are made promptly. Kraft pulp is only in fair requisition and it is announced that the improvements to the plant of the Dryden Paper Co. at Dryden, are about finished. The output will be seventy five tons daily of sulphate pulp, the greater portion of which will be converted into light and heavy wrapping papers and sulphate building papers.

Rumors are heard of new mills about to be established by American interests in Canada as the agitation for an export duty on pulpwood from freehold lands is said to be gaining strength or, at any rate, is causing certain U. S. concerns to consider getting nearer the sources of raw material. Book mills are going more and more after export trade as the production in the Dominion is now in excess of the demand.

As illustrative of the growth of the paper industry in Canada of recent years and the popularity of Canadian made paper, the following reference which appeared in a Toronto daily recently, tells an interesting tale, it is as follows:

"Made in Canada" is a phrase now so familiar that it attracts little attention at home, however effective abroad, but it had to be started some time, and the man who originated it as a business slogan passed away recently in the person of F. A. Ritchie, of Ritchie and Ramsay, coated paper manufacturers, Toronto. When the firm started some 30 years ago there were warnings that such an enterprise could not compete with American products, but the trade-mark "Made in Canada" was adopted, and afterward became popular with manufacturers throughout the Dominion. These words were particularly in use during the war, when greater production and the patronage of home products were so keenly emphasized. Mr. Ritchie, who gave it birth, was modest in disposition and of a retiring nature, but he never was afraid to stand up for Canada, Canadian industry and Canadian products, even at a time, back in the early '90's, when the name of Canada did not figure nearly as largely or as luminously in world affairs or in the paper arena as it does today.

NEW YORK MARKETS

New York, May 5 — (Special Correspondence) — The paper market in New York, judging from the great majority of reports, continues firm. Firmness is unquestionably the oustanding characteristic of the situation. Perhaps demand has dropped off somewhat for certain lines of paper, perhaps jobbers are not quite as busy as they were a short time ago, perhaps mills are not as deluged with orders as recently, but the fact remains that prices of paper of practically every kind and description rule firm; if anything, the tendency is toward higher levels.

An important development of the week was the announcement of the American Writing Paper Company of an advance of a quarter of a cent per pound or $5 a ton in its lines of book paper. This was looked upon by many in the trade as a forerunner of further price advances all along the line as a result of increased production costs. On the other hand, there were those who believed that further advances in book and fine papers were improbable since the tendency is toward stabilization, while the next several months are proverbially slack times in the paper trade. It is a fact that paper manufacturers are exerting every possible effort to maintain prices on a stable level. None wants to see prices rise to a point where demand might be affected in an unfavorable way, yet price advances are being put into effect from time to time because the higher cost of production necessitates such action. Papermakers have been warned so often recently of the danger of price inflation that they apparently are the last who desire to see prices move too high, and it is therefore more than likely that any price revisions that are made will be based on the absolute necessity of bringing the quotation on the finished product up to a relative level with the cost of manufacturing.

However, it is generally conceded that prices of book paper — on an average — are proportionately below those of most other kinds of paper. Book paper was about the last kind of paper to feel the improvement in business, and while mills are now busily engaged and are in the favorable position of having orders on their files for large tonnages of paper, prices of book paper have not advanced in relative proportion with other grades. Advances such as one of the biggest producing concerns in the country announced this week consequently are not by any means out of line.

There is still a good deal of talk in the trade concerning the probability of higher newsprint prices. A majority of dealers and mill agents in New York seem to expect a revision upward in the contract basis for the third quarter of the year. The fact should not be overlooked that print paper manufacturers are in probably the most favorable position of all producers of paper. Their mills are running at top speed, consumption of paper is setting a new record, and the cost of production is mounting. Wood pulp and other raw material is rising, and an increase in wages has been granted mill workers. Therefore, newsprint manufacturers are in a favorable way to mark up prices; certainly prevailing conditions would seem to warrant such action, and it appears unlikely that an advance would in any manner affect demand since publishers could well afford to pay the increase. A glance at any of the issues newspaper publishers in this and another cities are putting out, with their pages upon pages of advertising, tells the reason why they could afford to pay higher prices for paper.

Demand for fine papers is fair. There is not the snap to buying that was noted a few weeks ago but the call for supplies is steady and printers as a rule are absorbing moderately large supplies. Prices are holding firm. The cost of raw material to writing paper mills has not declined, instead it is rising in most cases; moreover it would require quite sometime for any recession in production costs to be reflected in the finished product.

Book papers are moving in good volume. Mills are well provided with orders and are operating full in an effort to catch up with their commitments. Wrapping paper is in fair demand though orders rather lack the volume of a short time ago. Tissues are in a similar position. Buyers are absorbing fair amounts but demand has subsided to some extent.

Box boards are in moderate call only; that is, plain boards such as news and chip. It is understood that demand as these branches of the paper box industry are levelier than the set-up box branch, while the cheapening trend of old paper costs has influence on board prices to a point where manufacturers are cutting prices to secure orders. Plain chip is reported to have been sold at $55 a ton f.o.b. New York this week, and news board at the same figure, though quotations generally range about $5 per ton above this level.

GROUND WOOD — Mechanical pulp seems to be in a rather easy market position. Demand is fair, from all accounts, but fair only, as consumers are buying in a strictly hand-to-mouth manner and as most of the large users are now enabled to grind for themselves all of the supply they require. It is stated that consumers in the Wisconsin district are buying in the open market fairly actively localities, and indications are that most of the supply of ground wood moving to other than contract customers is finding its destination in the West. Quotations are on a rather broad range. Some domestic producers are said to be asking and getting $40 a ton grinding plants for prime spruce ground wood for prompt shipment, whereas quotations down to as low as $30 a ton at pulp mills have been heard as coming from Canadian sources. Signs are that the bulk of ground wood selling currently is bringing in the vicinity of $35 per ton f.o.b. grinding plants.

CHEMICAL PULP -- All kinds of chemical wood pulp rule steady to firm in price and are marked by a fairly large demand. There is no intimation of any recession in prices and those on the selling side of the trade talk bullishy and contend that there is small likelihood of market levels declining for sometime to come. With navigation over the Baltic about ready to commence after the winter's freeze, it is probable shipments from Sweden will soon be moving forward but importers in New York argue that little supply of sulphite or kraft other than contract will be sent from that source to the United States in the next few months owing to the great loss of production caused by the mill lockout in Sweden and the consequent depletion of stocks in that country. Estimates have been received of Swedish manufacturers having sold on contract well over half of their entire 1923 output, and it is maintained here that they will hesitate about committing themselves further until later in the year. Quotations on foreign unbleached sulphite of prime quality hold at around 3.40 cents a pound ex the dock at this port, while Scandinavian kraft pulp is quoted at from 3.35 cents upwards ex dock. One sale of a thousand tons of Swedish kraft was made by a New York importer to a board mill several days ago at 3.25 cents per pound ex dock, but it was argued that this transaction was negotiated at slightly below the market value of this kind of pulp.

RAGS — The higher grades of rags rule fairly firm in price whereas the low qualities as chiefly used by felt paper mills have eased off somewhat this week. Roofing stock has declined some $2 to $3 a ton to where No. 1 packing is selling at around 1.40 cents a pound f.o.b. New York, and No. 2 stock at 1.30 cents. The influx of foreign rags has been so great recently that proofing paper manufacturers are understood to be well supplied at present so that they have been able to diminish their buying of domestic rags. New cuttings are quieter but dealers are maintaining quotations. Here and there slight revisions downward in prices have been made; for example, it is stated that No. 1 white shirt cuttings are available at 13 cents a pound f.o.b. this city against a recently prevailing price of 14 cents. Old white rags are quotably steady, as are thirds and blues.

PAPER STOCK — The decline in waste paper seems to have been checked. Prices have held fairly steady this week in New York, and in several cases slight advances have been recorded. The steadying of the market seems due more to conditions at the packing or supply end of the trade than at the consuming end, however. Prices were getting down so low that collectors were beginning to reduce their operations, and the drop in available supplies appears to have effected a firmer market condition. Folded newspapers have improved their quotable position a trifle. Most dealers want 1.15 cents a pound f.o.b. New York for this grade of stock at present and appear to be obtaining that figure. No. 1 mixed paper is quoted at about 95 cents a hundred pounds at shipping points, and city for common mixed paper at 70 cents. Shavings are quoted at an average of 4.15 cents per pound for No. 1 hard white, and 3.40 cents for No. 1 soft white shavings. Magazines stock continues to be largely neglected by buyers, and heavy No. 1 books are offered at 2.10 cents a pound f.o.b. New York and probably at less without attracting many purchasers. Kraft paper is steady at around 2.15 cents a pound, and ledger stock at 2.60 cents.

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OLD ROPE AND BAGGING Old manila rope is moving toward paper mills in a consistent way and at firm prices. Seven cents per pound at shipping points is the basis most dealers quote on domestic manila rope in No. 1 condition, and it is said that slightly in excess of this figure has been paid by some mills. Old bagging is quiet, with the exception of gunny which is in fair call. No. 1 scrap burlap is quoted at 1.25 cents a pound f.o.b. New York, and roofing bagging at about a cent per pound. No. 1 scrap gunny bagging of domestic origin is held by shippers for 1.65 to 1.75 cents a pound.

FOLEY NOT BUILDING MILLS IN ALBERTA

Through a friend in Montreal, we are advised regarding Foley Brothers Incorporated at Minneapolis, who were mentioned in connection with Wolsh and others as intending to build a pulp and paper mill in Alberta that there is no intention of constructing a mill there at the present time. This concern has, however, a large tract of timber in that province which is suitable for pulpwood. There is a large supply of available water power, and the parties mentioned would be glad to get in touch with persons interested in building a mill.

WHAT IS THE INDUSTRIAL CRIPPLE WORTH?

By F. R. BIGLER in "The Valve World"

To the average employer he is not worth much. This is a mistake. A cripple, placed in the right position, is an asset and not a liability in any organization. A cripple, who is O. K. from the collar up, will make good nine times out of ten. The men who make the big money in the world today are the men who use their brains, not their hands and feet.

Men are like matches. There are three kinds of men in every walk of life; there are also three kinds of matches. Everyone is acquainted with the safety match. It is a good match, but will work only under one condition — you must have the box to strike it on. Some men are just like this match. Then there is the common match. It will work any place. There are men like the common match, who will make good wherever they may be. There is also the match with the defective head, which will not work under any condition. Thousands of men are like the defective match. They will not work or make good if given a chance. Now, if you break each of these matches you will find you have not changed the efficiency in the least unless you have damaged the head. This is true of the man who is crippled. His ability is not changed, as far as his earning capacity is concerned, if his head is O. K. Some will make good under certain conditions; others will be successful in any place if given a chance, and there are men, who, like the defective match, will not work, but will become beggars on our streets, regardless of what is done for them.

The public is to blame to a great extent for having the crippled beggar on the streets of our cities. You think you have done a charitable act when you give a cripple 10 cents. The greatest charity in the world is doing that which will make charity unnecessary. If money is not given to the street beggar, he will be forced to do for himself or go to the poorhouse. Most of these men, if they knew the public would not help them to live in idleness, would take advantage of the training that it is now possible for them to get in

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WOOD PULP AGENTS

thirty five states in the Union. For every dollar spent by a state in training a cripple to earn his livelihood, the United States government will give an additional dollar. The trouble with this law, however, is that there is no way provided for the cripple to maintain himself during his training period. If the civic bodies in our big cities would set aside a fund from their charity drives each year to be used to maintain cripples while being trained, in a few years there would be no cripples begging on the streets or selling shoestrings.

The time is ripe now to educate the employer in regard to giving the cripple a chance in his organization. Henry Ford had 9,653 cripples employed in his plant in 1918, and proved a cripple could become an asset, as he has made a notable success of his business and could not have done so had these men been dead wood in his organizations. If every employer would fill a small percentage of the positions in his organization with cripples, think what it would mean to the two million cripples in the United States. Also think of the money saved in the way of taxes. The more tax payers we have, the smaller the tax. Beggars or inmates of poorhouses pay no taxes, so the burden is thrown back on the public.

Canadian pulp and paper products will be strongly represented on the Canadian exhibition train which will tour France. The products will be supplied by the different mills, while the Canadian Pulp and Paper Association has prepared a small booklet, in French, descriptive of the growth and extent of the industry. Ten thousand copies of this booklet will be issued for general distribution. The exhibition train will thus afford the pulp and paper trade an opportunity of bringing home to the French people the great strides made in the last few years and of showing the quality and variety of our products, and will serve as an additional bond of understanding between the two countries.

HYDROPLANES FOR FOREST PATROL

The Canadian Department of National Defence has placed an order with the Canadian Vickers here for six hydroplanes. These, it is understood, are mainly to be used in forest patrol and fire prevention work. The planes will be manufactured in Montreal.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill

Tenderers shall also be required to say what theey are prepared to pay, per thousand feet Board measure, for the following classes of timber,, over and above the upset prices in addition to Crown dues

Upset price — Red and White Pine	$6.00 pr M. ft. B. M.
Spruce (too large for pulpwood)	- $5.00 per M. ft. B. M.
Jackpine (banksian)	- $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, ,is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, April 16th, 1923

N.. B. — No unauthorized publication of this notice will be paid for.

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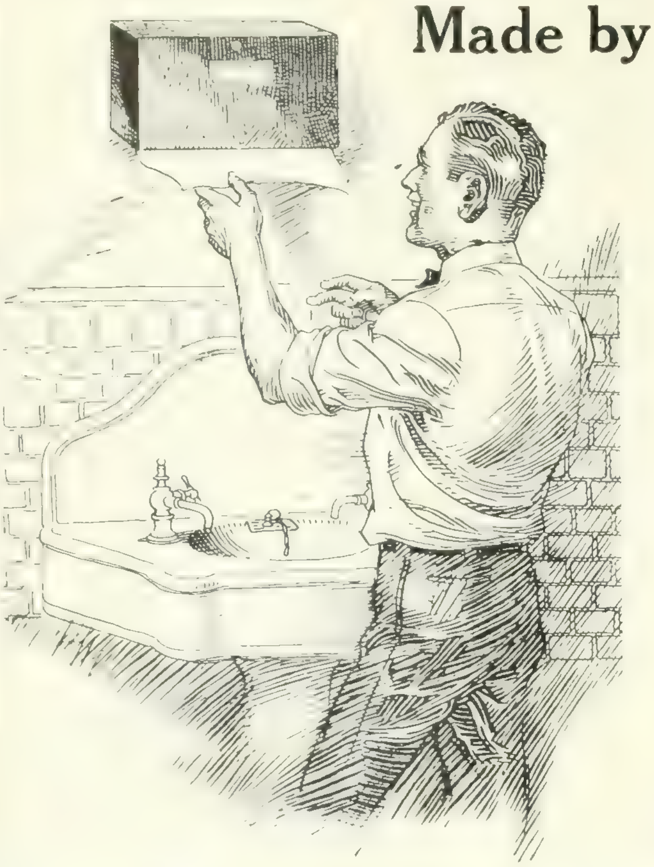

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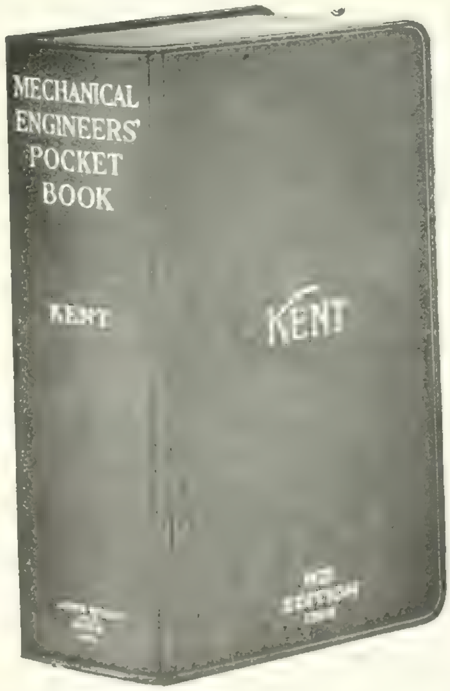

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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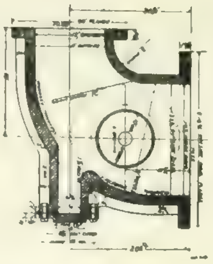

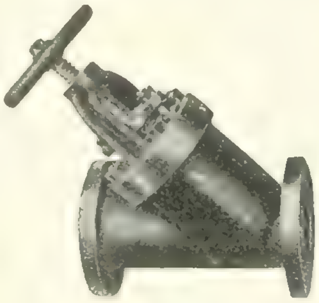

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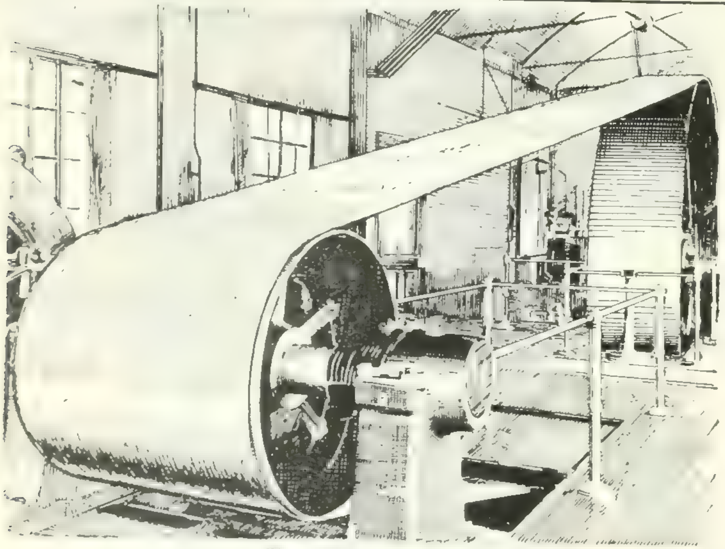

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:-: EDITORIAL :-:

CONCERNING THE BUDGET

The Budget, brought down last week by the Hon W. S. Fielding, Minister of Finance, contains several points of interest to the pulp and paper industry. These include tariff duties on paper, and the pulp wood problem.

The proposal to drop the duty on newsprint may be considered largely a matter of reciprocal courtesy to the United States, which admits Canadian newsprint free of duty. As for the decrease of 10 per cent in the amount otherwise payable by way of duty on British goods, already given preferential treatment, we can see neither political nor economic reason. We are not interested in election promises, but we are interested in keeping Canadian workmen employed, so that they can purchase for their needs, whether the goods be domestic or imported. It remains a bit of a question whether the import of foreign goods, in competition with Canadian, needs further encouragement. It seems that a fair amount of English machinery, textiles, paper, etc., is coming in now and that the reason we do not import more is because of convenience rather than price. Where the English product is sufficiently superior for a certain purpose the matter of about 3 per cent. in the price is not a prohibitive factor, but where there is keen competition, and 3 per cent. takes business away from a Canadian mill that could produce the goods, we have something different again.

In regard to Australia, we have quite a different situation. There it appears to require preferential consideration of goods that can be brought in from that part of the Empire, in order to implement the sale of Canadian goods under preferential conditions such as are provided for similar goods made elsewhere under the Union Jack.

On economic grounds, we can see no reason for lowering tariffs. The plain situation with regard to our National finances is — we need the money. The country is enjoying a fair measure of prosperity, but an inducement to spend the results abroad will not greatly assist in keeping the home fires burning; the increase in export business, because of the possible increase in imports will not cause any great amount of overtime work in our mills and factories or on our farms. We must, of course, do enough business abroad so others can afford to, and will want to buy from us, but there is a limit to the inducements necessary. The Budget doesn't balance.

With regard to the pulpwood problem, Mr. Fielding, in presenting the Budget, said:

"Forest conservation had engaged the attention of the House a great deal. Where a country had a lavish supply of timber, it was expected that people would be apt to become careless of it, and those who viewed the situation with alarm had asked the Government to go as far as to prohibit the export of wood. Where the provinces controlled the land they could take their own measures There were, however, a number of private interests which owned large timber lands, and such interests felt that they were fully entitled to market their product to the best advantage anywhere in the world. It had, therefore, been decided to name suitable persons to inquire fully into this matter during the coming recess, in order that the Government might come to a well-advised conclusion as to the necessary steps to be taken."

This announcement is encouraging. It shows that the Government is alive to the urgency of the situation and is going to take counsel before deciding on a definite course where a number of conflicting interests are involved. The outstanding reality in the matter is the fact that raw pulpwood is being exported to the detriment of Canadian mills, both by cutting into their own dwindling reserves and by furnishing fodder to their competitors. This export of raw wood also encourages excessive cutting of farm wood lots, of bogus settlement for the purpose of skinning the timber, and does not contribute in proportion to its value to the conservation and protection of our forest lands. Promise of action in this matter by the Minister of Finance puts a more hopeful aspect on the situation and must be a source of gratification to Mr. Frank Barnjum, who has been untiring in his efforts to arouse the Canadian people to the seriousness of the outlook for industries dependent on the forest if the happy-go-lucky policy of the past is allowed longer to continue.

But there is the possibility, on the other hand, that the idea of appointing a commission is merely a means of "passing the buck." Not only foresters, but prominent politicians also, have expressed themselves as in favor of more stringent measures for the insurance of wood supply for Canadian mills. When such measures might also furnish a source of income, it is surprising that a definite scheme has not been included in the Budget. The findings of the commission will depend on its members, and where their treasure is.

PLENTY OF EGGS; TOO FEW BASKETS

The development of Canada's natural resources in relation to foreign trade is dealt with by the Natural Resources Intelligence Service of the Department of the Interior. The object of the statement is to show that our foreign trade rests on too narrow a basis, and that our commercial progress is apt to be retarded unless we can bring into operation new resources on a more extended scale. The statement points out that our expansion during the last twenty-five years has been due mainly to grain and wood products, and that these contribute more than half of the total value of the Dominion's sales abroad. There is however a limit to the demand of these commodities, and a wider range of natural resources will have to be utilised if Canada is to maintain her place as an exporting nation.

The pulp and paper industry is vitally interested in export trade, as this is the foundation of the industry, particularly of the newsprint section. Without orders from foreign countries, and especially from the United States, newsprint mills could not exist, but if Canada is to retain that hold on the American market we must not shut our eyes to the possibilities of our supplies of raw material being seriously depleted. Reference is made to this by the Statement in the following words: — "In the case of the pulp and paper industry there appears to be little or no commercial check upon the progress of development, but according to the Federal Department of the Interior, we are approaching a condition in certain provinces which raises the question as to how large an annual cut our forests can sustain."

It is obvious that we are making great inroads on our pulpwood resources, and that the extension of existing mills and the construction of new plants will involve much greater demands on these resources. As we have before pointed out, there is urgent need for measures to conserve our pulpwood resources, in order to ensure a permanent supply. While the danger of depletion is widely recognized, there has been no co-operative effort to speak of in the direction of finding a remedy.

Leaving that on one side the question of prohibiting all export of pulpwood, concerning which Mr. Fielding has promised an inquiry, and the subject of reforestation, there are other fields which offer opportunities to conserve our natural resources. For instance, the measures to prevent forest fires are quite inadequate. Year after year we lose millions of dollars of forest products because of the carelessness of a few people, and because we do not spend enough money in properly protecting the forests. Admittedly progress has been made in educating the public to be more careful; admittedly the Provincial Governments are more alive to the importance of protective work, and admittedly the forest protective associations are more efficient, but the fact that we annually incur such serious losses by fire is sufficient to indicate that the preventive measures are far from being what they should be. It is satisfactory to note that an effort is being made to secure co-operative action by two or three Provincial Governments in the matter of fighting fires at border points and that the force of rangers is being increased in the Province of Quebec. But when will we awake to the fact that we are still a long way off from taking all the necessary precautions?—F. H. D.

COBWEBS

The Squires Government has been returned to power in Newfoundland with a comfortable majority. The issue in the recent election was principally the policy of the Government to guarantee $9,000,000 principal and interest for the establishing of a pulp and paper mill on the Humber River. The British Government has taken this action with respect to the other half of the capital requirements.

The St. Lawrence Paper Mills at Three Rivers started up their second machine last week and will soon be making 120 tons of newsprint per day.

A. Chaplet writes in "La Revue de Chimie Industrielle," page 206, July 1922:

"The solvent and disintegrating power of solvent soaps containing hydrocarbons is used to advantage in the decortication of textile fibers and in the preparation of paper pulps. Flax, hemp, ramie, jute, sisal,...can be thus decorticated in one hour without affecting the fibers in any way. Certain varieties of reeds and of straws, certain leaves with long strong fibers, when treated with hot solutions of kerosene soaps, yield fibers suitable for spinning. Esparto and wood can be thus very cheaply converted into pulp of excellent quality."

Perhaps Canada had better scrap its pulp mills and erect laundries in their place!

ENOUGH IS PLENTY

Most assuredly those mills now erected should be guaranteed ample supplies for present development and generous additions, but none should be given a hundred years' supply, thereby encouraging wasteful bush operations. A limit with forty to fifty years' supply standing should mean permanent cutting under proper management, and that should be insisted upon. — Port Arthur "News Chronicle."

Habits make ruts either for God's chariots or for the devil's wagons.

THE PLACE OF CHEMISTRY IN BUSINESS

By ARTHUR D. LITTLE, Chem. D.
of Arthur D. Little, Inc.

(An address, reprinted from the Technology Review.)

There is in most of us a curious disinclination to have new knowledge forced upon us and until recently the business executive, so far at least as the teachings of science were involved, was little more receptive than the college undergraduate who was out for a place on the football team. To chemists, who, like myself, were trying thirty years ago to preach the gospel or research to militantly skeptical business men, the process of assimilation by them bore a striking resemblance to the forcible feeding of suffragettes. Happily, the situation has greatly changed in recent years to the marked advantage of both business men and chemists. This happy result is due in large measure to two men, the authors of two books, which are, or which ought to be, known to all of you. The first of these men was Dr. Robert Kennedy Duncan, the founder of Mellon Institute of Industrial Research and the author of "The Chemistry of Commerce." The second is our distinguished speaker of the evening, the author of "Creative Chemistry," Dr. Edwin E. Slosson, Editor of Science Service.

I am anxious not to encroach upon Dr. Slosson's preserves this evening, but he will, I feel sure, permit me to bring some brief cumulative evidence in support of his general thesis.

In the mind of the average business man chemistry is something quite apart from business, an abstruse science that deals with things of evil smell and unpronounceable names, something for the laboratory or the underpaid professor, but with which the hard-headed man of affairs has little need to concern himself. Yet you business men, who deal in dollars, think it well worth your while to learn all you can about them. You want to know where they are plentiful and where they are scarce. You follow their purchasing power and the interest rate they carry. You sit up nights trying to advise new ways to put salt on the eagle's tail. You employ bookkeepers and accountants and income tax specialists in order that you may trail these dollars through every portion of your establishment and persuade the Government that a few of them really belong to you. You study balance sheets and audits and inventories, and base your decision upon what they tell you about dollars.

But the dollar is merely a symbol, a generic symbol, of the value of things. The values are in the things the dollars represent, not in the dollars themselves. The things behind the dollar are materials and labor, and labor creates values only as it works upon material. Obviously, therefore, the ways and properties of material or matter are of greater fundamental importance to you as business men than even the properties and ways of dollars.

Now chemistry is the science which deals with the properties of matter and the changes which they undergo. Whether you know it or not, chemistry is, therefore, a partner in your business in a far more real and vital sense than the Federal Trade Commission, the Interstate Commerce Commission, the Tariff Board, the labor unions, the Federal Reserve Bank, or any other of the man-made agencies with which you admittedly have to reckon. As wise business men you take carefully into account freight schedules, city ordinances, insurance regulations; you observe the man-made laws of Legislatures and of Congress. But chemistry has some laws of its own that are not man-made; laws beyond the power of any Legislature or Congress to repeal. What do you know about them, or how far do you take them into account in the conduct of your business? The science of chemistry is simply a codification of these laws and an orderly arrangement of the innumerable facts upon which they are based. The chemist is the counsellor-at-chemical-law, and as such you need him in your business. I suggest that you make an early reservation, as there is only one chemist to each 7000 of our population. An ounce of whiskey in 55 gallons of water is a pretty thin mixture.

The war, which has changed everything, has given a new aspect to chemistry and a fresh impetus to research. Hereafter, the nation which would live must know. Through the wreck and peril of other peoples, Americans have learned with them that research has something more to offer than intellectual satisfaction or material prosperity. It has become a destructive, as well as a creative agency, and in its sinister phase the only weapon with which it may be fought is more research. The organization and intensive prosecution of research has thus become a fundamental and patriotic duty which can neither be ignored nor set aside without imperiling our national existence.

Now we are carrying as cheerfully and hopefully as we may the stupendous burden of the war. Chemistry, with the sympathetic and understanding coöperation of business and financial men like yourselves, can do more to lighten that burden by the creation of new wealth in vast amounts than all the law makers in Congress and State Legislatures. And the first step is to stop the stupid, wicked, childish waste of our basic natural resources. The time has passed for quoting figures. They are of astronomical proportions, anyhow, and make no more impression on the mind than the distances of the fixed stars in light years. The time has come to demand action, to the end that we may pay our bills with what we waste. Let us develop our estate. It has potentials vastly beyond anything we have accomplished.

A very large proportion of industrial problems are problems in applied chemistry. Many of these so-called problems have already been solved somewhere. The present need of industry is not so urgent for new research and for new facts as for the immediate and proper utilization of facts already known and demonstrated.

A few of you may remember that in pre-prohibition days, beer commonly became cloudy when placed on the ice. It was an objectionable tendency which the best skill of the brewers was unable to overcome. A little research by a clever chemist proved that the cloudiness resulted from the deposition of albuminoids previously in solution. He remembered that pepsin digested albumin, added a trace of pepsin to the beer, and the thing was done. The beer remained bright at any temperature.

Not long ago a Jewish manufacturer was using a leather stain for which he was paying eighty-five cents a gallon. It proved to be water containing a little gum tragacanth and still less aniline dye. He was shown how to make it at a cost of less than ten cents a gallon. He said he began to realize where the Gentiles get the money the Jews get from the Gentiles.

In a plant near Boston using two tons a week of special steel, rolled very thin, the chemist was able in about two years to reduce the cost of this material from eighty to forty cents a pound, at the same time standardizing and greatly improving the quality of the steel. Broken rails are more expensive than analyses, and there are no dividends in broken trolley wires, defective castings, spotted or tendered piece goods, or rejections in any line of manufacture. Competition is difficult when your wastes are your competitor's profit.

Perhaps the greatest domestic problem before the country today is that of transportation. I still guard, not as carefully as formerly, a few shares of the New York, New Haven & Hartford Railroad which I bought at 188. It was going to 200. I doubled up at 70. It is now about 20. And yet a New York banker had the nerve to tell the American Chemical Society at a dinner at the Waldorf that what he required of chemical investments was absolute security. We have lots of things at 30 Charles River Road, Cambridge, that are lead-pipe cinches in comparison with any bank-managed railroad that slides from 188 to 20. I know of one poor little chemical company which started with $20,000 capital and in a few years wrote off $750,000 in real estate and equipment.

However deeply your sympathies may be aroused, you must not let my ownership of a hand car or a water tank on the New Haven blind you to the fact that your business cannot go on without the railroads. You will admit that without argument, but what I want you to realize is that the railroads cannot go on without chemistry. They operate on steel rails, and those rails are cheap because of the Bessemer process of making steel. Few even among railroad men realize how greatly the whole community is in the debt of Dr. Dudley, whose laboratory work went far to standardize the railroad practice of the country. His specifications covered rails, soaps, disinfectants, oils for signals and for lubricating, paints, steel in special forms for every use, car wheels, cement, signal cord, and every detail of equipment. He made the transportation of life and property cheaper, safer, and more expeditious by reason of his application of chemistry to the problems of railroad management.

I would ask you to consider what chance you would have of securing cheap transportation without the Bessemer process or that of Thomas and Gilchrist which followed for phosphatic ores. What without them would be the value of iron ore lands in this country or that of coking coal? What inducement would Germany have had to go to war if she could not smelt the phosphatic minette ores of Lorraine? Picture, if you will, the opportunities for labor which these processes have created in the mining of coal and iron ore, in the coking of coal, in the making of rails and structural steel and plates for ships. Shopkeepers who never heard his name owe their prosperity to Bessemer, and the cheap Bessemer steel is the foundation of countless industries.

By the way of suggestion, let me point out a few of the more obvious ways in which chemistry can serve the manufacturer.

There is, first, the control of quality of raw material, such as steel, alloys, bearing metals, lubricants, coal, paints, paper, cement, and practically everything else you buy.

Second, perhaps, is the problem of finding suitable substitutes for such supplies as are unobtainable or unduly high in price. For example, there is the use of selenium in place of gold in the production of ruby glass, the substitution of tungsten points for platinum in spark plugs, of silica ware for platinum dishes for the concentration of sulphuric acid, of casein for glue, of chlorate of soda for chlorate of potash in dyeing, of zein (derived from corn) for the prohibited shellac for varnishing confectionery, of specification oils for oils whose value is largely in brand names, and of the specifically indicated chemicals in place of high-priced boiler compounds.

Of even greater importance is the scientific control of processes of production, control of formulas, temperatures, pressures, time and spacing, fineness of material, moisture content, and all the other factors which influence the quality and amount of your daily output. Correlative with such control are the studies having for their object the standardization of your product, the elimination of seconds and rejections, and the profitable utilization of wastes.

No more striking example of the place which research has come to occupy in business has recently appeared than the one, to which John E. Teeple called attention in an address, entitled "Research as a Basis for Credit," delivered last November before the Bankers' Forum in New York. Dr. Teeple said:

"In 1915, there was no potash industry here. We wanted one suddenly and the price of potash was high. In 1918, 44 plants were actually producing potash as a main product (not as a by-product of some other operation). Just one of these 44 plants deliberately organized a research department and kept it constantly at work making a complete and fundamental study of its problems. Today, potash is back to pre-war prices or lower and only one of the 44 plants is operating in competition with French and German potash. This one plant had no particular advantage of location, raw material, patented process, or knowledge of the industry over many others, but its directors had the foresight and its financial backers had the nerve to organize research and put up the money for it month after month in good times and in bad ones. If a banker in 1919 had been asked to pick the one plant out of the 44 that would live, could he have done it with all the facts before him? Not unless he gave due and in this case extreme credit to that fifth basis of credit—Research: organized, unremitting, obstinate research."

Courtesy Industrial Canada

MACHINE ROOM EQUIPMENT OF WESTMINSTER PAPER MILLS, LIMITED

On the left is a view of the 130-inch Beloit "Yankee" machine and on the right the 66-inch Beloit crepe machine. These photographs were taken on December 22, 1922, about one hour before the first paper came off the machine. The Company are a new industry for Western Canada

J. J. Herb is president and manager, M. F. Herb,vice-president, H. M. Lord, secretary treasurer, and R F. Arnett, assistant sales manager.

Bankers and capitalists should thus realize, as they doubtless do, that the basis of credit for industrial enterprises has shifted. Past earnings have lost their significance. Audits and inventories and balance sheets tell the story of past performance. What is now required is the assurance of future earning power. That assurance can be safely based only on technical studies covering raw material supply, the adequacy of equipment, the relation of processes and methods to the best modern practice, the efficiency with which energy and material are utilized, and the status of the product in the market under the new industrial and economic conditions. Now is the time to put our house in order, to sweep out wastes and inefficiencies, to study and solve our problems, to make ourselves worthy of and ready for a sounder and broader prosperity than our country has yet known. Let us go to it.

PROGRESS WITH THE CHEMICAL EXPOSITION

In order to secure from the various companies who will exhibit at the Ninth National Exposition of Chemical Industries which will be held at the Grand Central Palace, New York, during the week of Sept. 17 to 22, inclusive, the industries which they are most desirous of reaching through their exhibits, a questionaire has been sent out by the Exposition management. Based on the expressions of opinion by the majority of exhibitors, the final plans for the 1923 Exposition will be laid. According to types of visitors most desired, appeals will be laid on features of the program designed to attract them to the Exposition. By deliberately planning the appeal to interest along well defined channels, the management of the Exposition expects to bring materially larger proportions of the buying power of the chemical and equipment consuming industries than in previous years.

If the home does not train the child to know God and to serve him, the chances are all against the child's ever knowing him or serving him.

BAMBOO CUTTING RIGHTS FOR PAPER-PULP IN KENYA COLONY

(From Commercial Intelligence Journal.)

Tenders are invited by the Government of Kenya for two areas of bamboo forest estimated to produce 60,000 tons of pulp per annum; the basis of tender will be a royalty payment per ton of air-dry pulp commencing five years after the issue of the license. No tender of less than 2s. a ton will be accepted. The successful tenders will be granted licenses under the Forest Ordinance, 1911, for a period of twenty years, with options for renewal for further periods of twenty years on terms to be agreed between the Conservator of Forests and licensees. Tenders must be forwarded to the Conservator of Forests, Nairobi, Kenya Colony, on or before July 1, 1923, and should be marked on the outside of the envolope, "Tender for Bamboo." Further particulars, including a pamphlet embodying the results of experiments conducted in Kenya, and of measurements taken in the bamboo forests, may be seen at the office of the Crown Agents for the Colonies, 4 Millbank, London, S.W.1.

The Hamilton Cove Pulpwood and Lumber Company, Limited, has been incorporated with a Quebec charter. The powers include carrying on business as manufacturers, dealers, importers and exporters of pulpwood, paper, and lumber, and also vendors of electric light in the Counties of Chicoutimi and Saguenay. Mr. D. H. Pennington, lumber merchant of Quebec, is interested. The capital is $150,000 and the head office in Quebec City.

The Rolland Paper Co., Limited, Montreal have issued a very neat advertising folder in red and black, entitled "40 Years of Untarnished Record". The folder states in part: "For 40 years Rolland Paper Co. Limited, has been making Superfine Linen Record. During that time the quality has not deviated once from its standard — best all-rag, loft-dried bond paper that it is possible to make".

THICKNESS AND WEIGHT INDICATOR

Mr. Frank Lang, of the Ontario Paper Co. writes as follows, and is to be congratulated on the results of his inventive effort.

I am taking the liberty of enclosing a short description of a recently developed automatic thickness and weight indicator for use in paper machines. I enclose a chart obtained with this device, now being in continuous operation on a board machine, which runs on sulphite and ground wood tailings, and would kindly ask you to publish this in the technical section of your valuable paper, as I feel confident that mill managers and superintendents will find this thing very interesting.

It is common practice in every up to date paper mill, to test the sheet for weight and bulk or thickness, and up till the present time to obtain this, a sample had to be taken by a man in attendance, and the sample weighed and calipered. In the physical testing of paper there is a definite range set for weight and thickness, called the "tolerance limit." This testing is very important for the paper maker, as there are several factors tending to change the sheet from the time it leaves the flowbox in a liquid state, until it is rolled up into reels at the winder.

It is easily understood the more samples are taken, the better informed the machine tender will be as to the condition of his sheet and so be able to control same more efficiently. Uniformity is economy. On the other hand, taking samples too often will considerably increase the percentage of broke in one finished reel.

Carrying in mind this strict physical control, after several months of experimenting, we completed a simple and effective little device giving us a continuous test, thus we know just what our sheet is, going to the reels, and these tests are continually recorded on a Bristol gage 24-hour chart, thereby doing away the constant tearing of samples to obtain the required tests. If the line described by the pen is straight, the sheet is uniform. If it swings one way or the other the weight, the bulk, also the finish have changed. Besides it will record all breaks on the machine, and the amount of time lost due to these breaks.

The device is constructed in such a way as to allow an easy installation on any make of paper machine and the gage may be set at any convenient or desired place in the machine room. The indicator gage will in no way interfere with the operations of the paper machine.

MAY BUILD BOARD MILL

General Manager E. Newell, of the Dominion Envelope and Carton Company, Limited, Toronto, is expected back from England shortly when it is expected that a definite announcement concerning the proposed building of a board mill by the company will be made. It is understood that partial arrangements for financing the enterprise have been made and that English, American and Canadian capital will be employed. It is stated that Mr. Newell has the authorization of his company to proceed with the project providing satisfactory financial arrangements are consummated and that a site is already in mind adjacent to Toronto.

HAYS HAS CONSULTING SERVICE

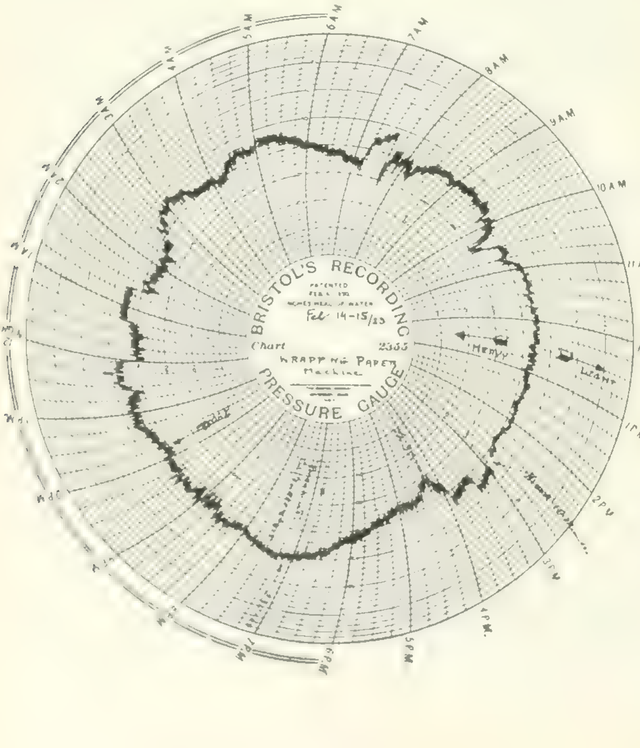
Mr. Jos. W. Hays is just completing the organization of a corps of consulting combustion engineers to be known as JOS. W. HAYS and ASSOCIATES. The headquarters of the organization will be Michigan City, Indiana.

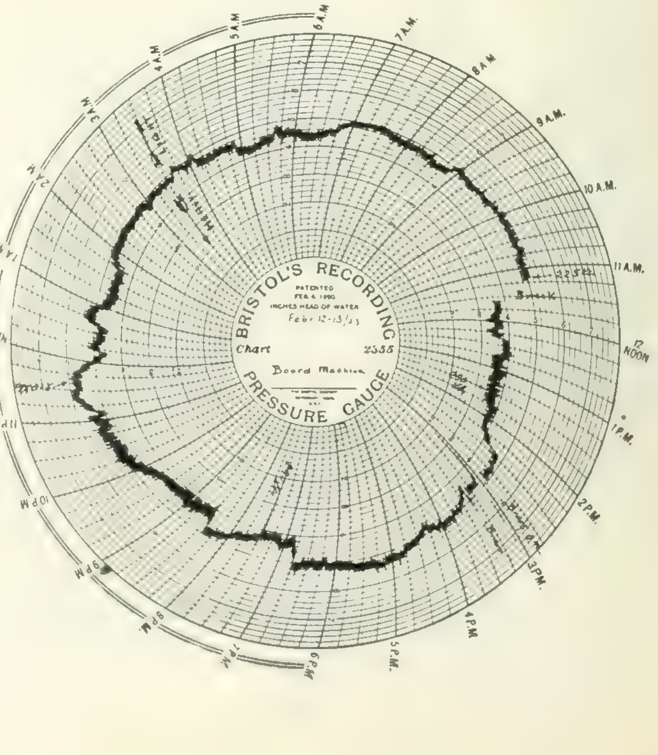
Mr. Hays has been finding it impossible for some time past to meet all of the demands upon his time, and for this reason is forming the organization.

Jos. W. Hays and Associates will be prepared to render consulting service in steam plants in all parts of the country. Every man in the organization will be a combustion expert of wide practical experience. No change will be made in the place of residence of any of these Associates. Each member of the organization will look after the engineering work in his immediate territory.

All communications should be addressed to JOS. W. HAYS and ASSOCIATES, Michigan City, Indiana.

We do not know how cheap and how fruitful the seeds of happiness are, or we would scatter them oftener.





A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE[*] and R. H. ROGERS[†]

(Continued from last issue)

The pulp after leaving the grinders passes through inclined sliver screens having a large area, leaving the slivers on the surface, from which they are raked by chain-operated scrapers.

A tank holding 96,000 gal. receives the raw stock, together with the return of useful stock from the second screens further down the line. Still more white water is added in the knotter mixing box before the stock goes to the four improved Sherbrooke rotary-screen knotters. Fiber bundles and other overlarge units are washed off the upper inside surface of the drums and pass to the wrapper-machine system, as was the case in the sulphite department.

MR. PHILIP T. DODGE
President, St. Maurice Lumber Co. Ltd, and International Paper Co.

The stock now flows into long rifflers, which are fitted with submerged baffles to arrest sand from the stones and other heavy impurities. Four improved rotary first screens further refine the stock while they discharge undesirable matter to the second screens for a rescreening.

A battery of thirty deckers thickens the stock by removing all but about one-tenth of the water. This is done by rotating meshed drums partly submerged in the stock. The water runs into the drum and away to the ground-wood white-water tank, while the pulp left on the surface is scraped off and passes to the concrete cavelike ground-wood soft-stock tank, which holds 890,000 gal.

Waste Water Leaves Mill Practically Clear

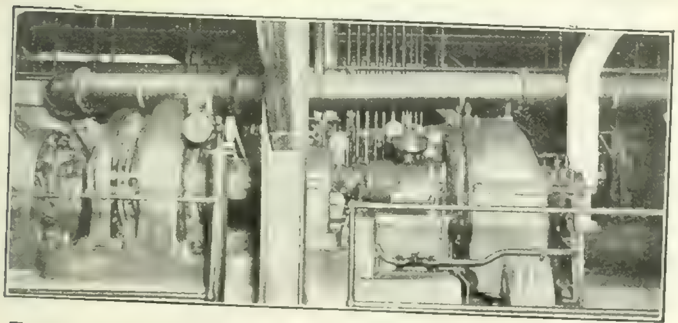
The white water extracted from the pulp in both divisions and the overflow from the circulating system in the paper mill proper go to their respective white-water tanks. The sulphite tank gets a great quantity from the paper mill tank, and the ground-wood white water is augmented by a small quantity from the same source. This water all contains valuable pulp, and both divisions make use of “save-alls” to recover a major portion of it. The ground wood “save-alls” discharge pulp to a “save-all” stock tank, thence to the main soft stock tank. The water with reduced pulp content passes to the “save-all” white-water tank, thence back into the system by way of the grinders, the sliver screens and the first screens.

In the sulphite department the “save-alls” discharge the recovered pulp directly to the main soft-stock tank. The reduced white water goes in a small part to the mixing box, to the first and second screens, while the major part goes to the sewer at the rate of about 20,000 tons per day. This is practically the only outlet of any size from the system, and by this time the water is practically free from pulp.

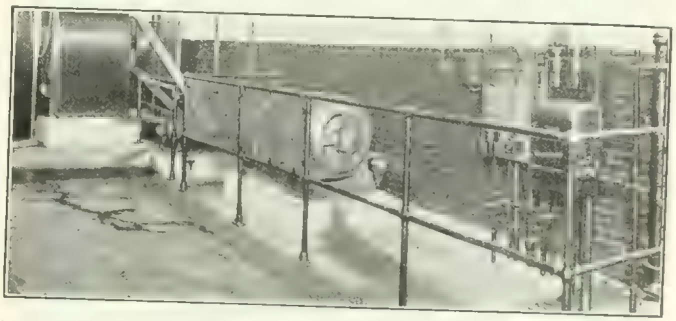
The Two Kinds of Pulp Are Now Mixed

The pulp from both soft-stock tanks as it starts on its way to the mixing system has its consistency regulated by an automatic system which continually samples the flow and admits white water in such quantities as are needed to keep the flow at a uniform consistency of 96.5 per cent water for the sulphite and the same for the ground-wood stock.

The two streams meet in the mixing system, wherein uniform heads are held against adjustable orifices. The heads are automatically held so that the two streams add 25 per cent and 75 per cent, or whatever other proportion is desired, to the whole. Incorporated with this unit are the feeds for the solution of alum and for the blue color. Both the Trimbey and Allen consistency regulators and the mixing system mentioned above are highly ingenious



Turbo-Generator Set for Driving Paper-Machine Exhausts Steam for Paper Drying



Motor-Generator Set and Control Units for Rewinder Motor on a Paper Machine

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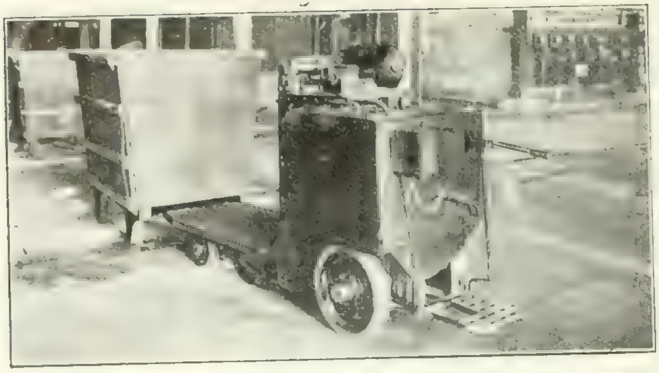
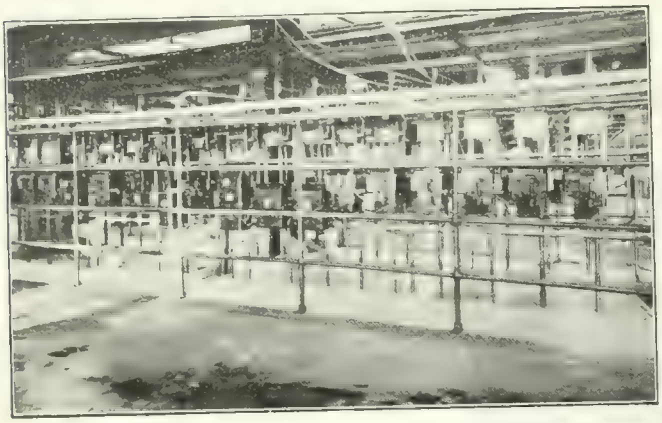
[*] Chief engineer, International Paper Company.

[†] Power and Mining Department, General Electric Company.



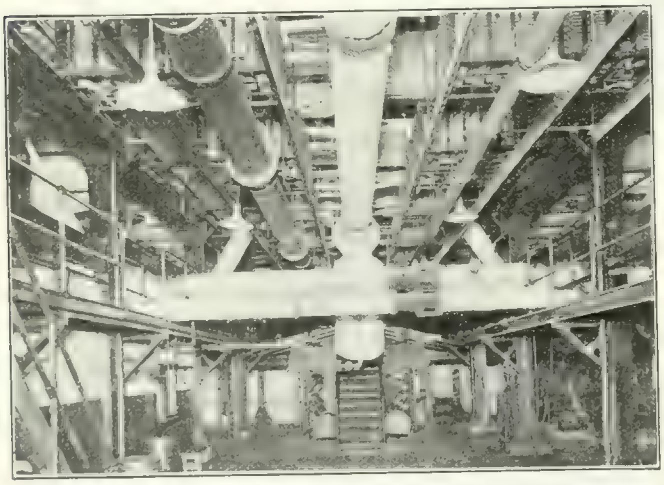


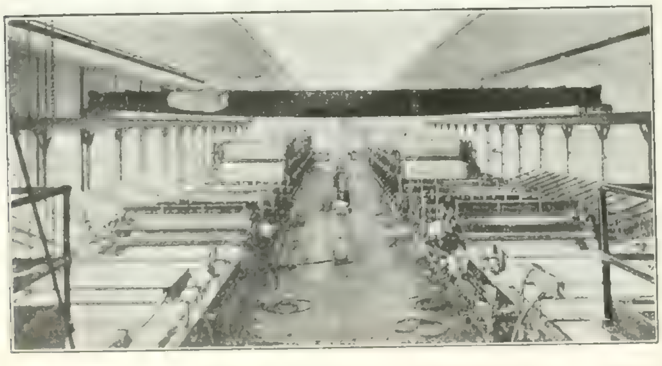
Upper view: A Lakewood elevating electric truck for carrying wet broke to broke beaters.

Second view: Switches and compensators for auxiliaries and paper machine sections.

Third view: Resistors and conduit in basement under dryers. Control panels for turbo-generators in center background.

Lower view: Bagley and Sewell 164 in. paper machines. Control units in center opposite dryers. Both machines making paper at 800 ft. per minute.





machines controlled by continuous-running fractional-horse-power motors whose importance in the general process is much greater than their sizes would indicate.

Another Screening Process Follows

The two machine chests that next receive the "stuff" hold 225,000 gal. From here the stuff is pumped to four constant-level stuff boxes which have return overflows. Next in order are the four mixing boxes, where the 1,600-g.p.m. flow is boosted to 14,000 g.p.m. by the circulating white water, about 64,000 tons being passed through the four machines every twenty-four hours. Each paper machine is preceded by three inward-flow rotating Bird screens which remove the last traces of undesirable matter and thoroughly agitate the fibers to insure a uniform quality of paper.

The tailings from the Bird screens go to second screens, where the rejected material is removed by hand and the material passed goes back to the paper machines.

The four Bagley & Sewell 164-in. paper machines are placed side by side in the machine room, which is 175 ft. wide and 320 ft. long. They are driven by the General Electric Company's sectionalized electric drive, using direct-current motors which take their current from a turbine-generator for each paper machine.

Paper Machines Have Sectional Drive

One paper machine is made up of nine independent sections, which, however, are intimately related as to speeds in linear feet per minute. These speeds, though slightly different for each section, are required to be maintained in precise adjustment in order to produce an unbroken sheet of uniform quality. At a speed of 800 ft. per minute the "stuff", 99½ per cent water, is converted into specification paper containing 10 per

Table IV (Continued)

Rechipper, blower and log splitter:	
Belts; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Chipper-knife grinder:	
Belts; one 3-h.p., 1,710-r.p.m., squirrel-cage.	Cr. Wh.†

*Canadian Westinghouse. †Crocker-Wheeler.

TABLE V—ELECTRIC MOTOR DRIVES IN DIGESTER AND ACID BUILDINGS

(Total connected load, 217.5 h.p.; 550 volts alternating current.)

Chip conveyors from chipper building:	
Gears; 10-h.p., 570-r.p.m., squirrel-cage.	C. W. *
Chip bucket elevator to chip bin:	
Gears; 35-h.p., 860-r.p.m., wound rotor.	C. W.
Chip conveyor over chip bin:	
Gears; 15-h.p., 900-r.p.m., squirrel-cage.	G. E. †
Two rotary sulphur burners:	
Gears; one 10-h.p., 690-.p.m., squirrel-cage.	C. W
Gas blower to acid towers:	
Direct; one 10-h.p., 900-r.p.m., wound rotor.	G. E.
One 2½-in. 250 g.p.m., 110-ft.-head water to acid towers:	
Direct; one 15-h.p., 1,800-r.p.m., squirrel-cage	G. E.
One 2½-in. 250-g.p.m., 110-ft.-head pump, acid to acid towers:	
Direct; one 15-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 2½-in., 250-g.p.m., 50-ft.-head pump, acid to storage:	
Direct; two 7½-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 8-in., 1,600-g.p.m., 65-ft.-head pumps, acid to digester:	
Direct; two 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Acid tower elevator:	
Geared; one 10-h.p., 900-r.p.m., wound rotor.	O. F. ‡
Digester building elevator:	
Geared; one 10-h.p., 900-r.p.m., wound rotor.	O. E. |
Ventilating fans:	
Three 5-h.p., 1,800-r.p.m., squirrel-cage.	C. W.

*Canadian Westinghouse †General Electric ‡Otis Fenson Otis Elevator cent water in forty-five seconds. It is a race between the water content on the one hand and gravity, suction, pressure and heat on the other hand.

The first section is the Fourdrinier wire, an endless belt of fine brass mesh the width of the machine. It runs around two rolls about 50 ft. apart, one of which, the couch roll, is driven by a directly connected motor. The upper surface of the "wire" is supported by a number of small table rolls, and near the couch roll and inside of the couch roll as well are installed a number of suction boxes extending the entire width in which a vacuum of 10 in. to 16 in. of mercury is maintained.

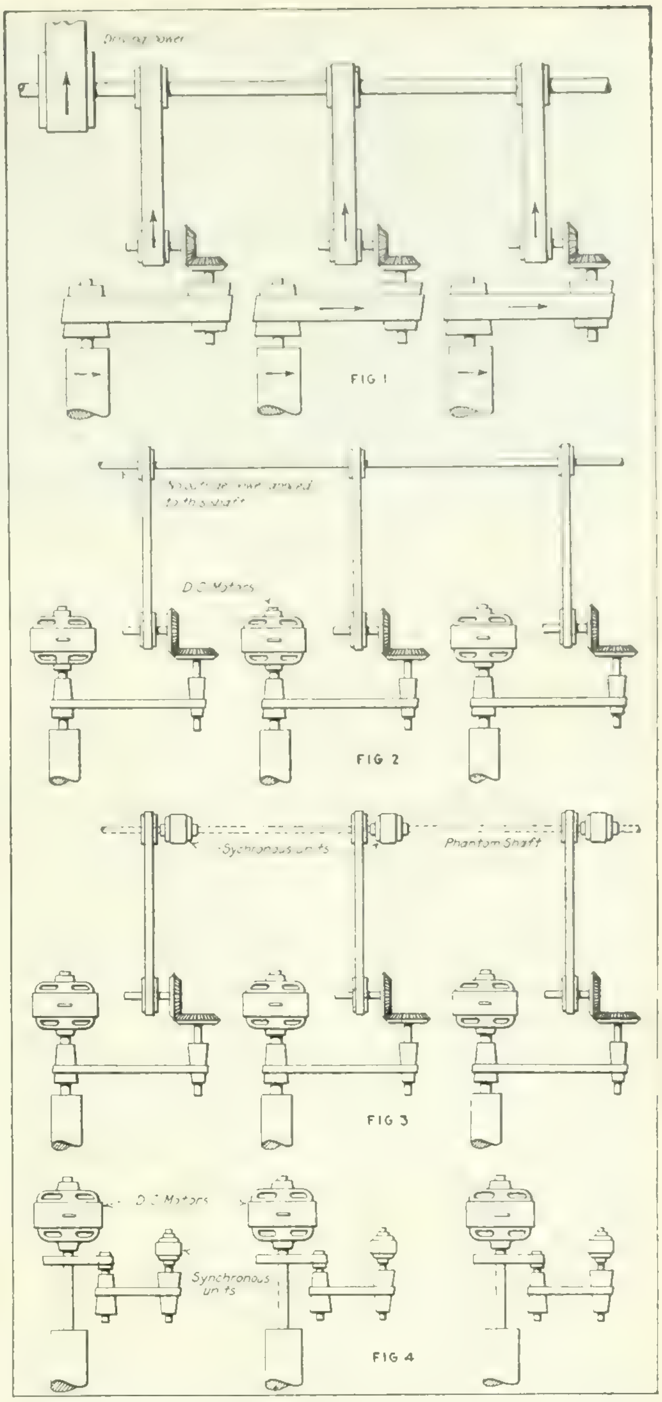
A uniform stream of stock about 5/8 in. deep the entire width of the wire belt is poured on with a velocity practically equal to that of the wire. During the three seconds that elapses while passing to the couch roll the greater part of the water falls through the wire mesh and the fibers are left in a felted sheet, which is further compacted by the forcible extraction of water as it passes over the suction boxes.

At the couch roll the deposited fibers have become paper. This is still 75 per cent water, but it has sufficient strength to withstand the strain of being peeled from the wire, whence it passes over an open space unsupported to the wool-felt-carrying member of the next section, which is the first press.

It can readily be seen that the speeds of these two sections must be adjusted with microscopic accuracy in order that the delicate web may not be overstretched on the one hand or not be carried away fast enough on the other hand. Through the press sections, of which there are four in series (three in use), each with its motor drive, the paper is carried on wool-felt between rollers under heavy pressure. The top rolls are made of polished granite with the pressure further augmented by compounded levers carrying weights. The bottom roll of the first press is provided with a vacuum box. These presses reduce the water content from 75 per cent to about 66 per cent, during which process the strength of the sheet is very materially increased.

The next unit, by far the largest and heaviest of all, is the dryer section, which consists of forty-four finished revolving cast-iron drums each 5 ft. in diameter by 13½ ft. long and heated by the exhaust steam from the turbine. This steam still holds about 88 per cent of the heat that it contained as it came from the boilers. The drums are all geared together and are fitted with a canvas belt having a total length of more than 600 ft. and as wide as the machine, since it must carry the paper. Means are provided for extracting the condensate from the rolls and returning it for boiler feed. The rate and extent of drying is controlled by adjusting the back pressure on the turbine. This section requires two motor drives on account of the great length of the train of gears.

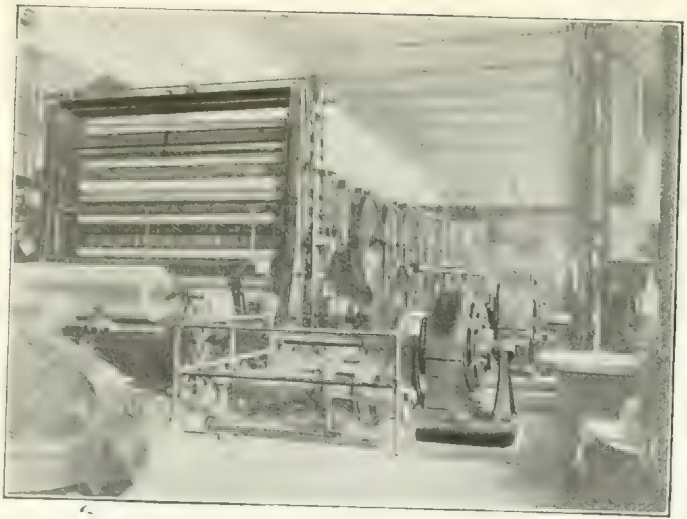
There is also provided an auxiliary alternating-current drive for this section with a large gear reduction which is used for convenience in starting or for low-speed operation of the drives. The combined weight of all the rolls in this section is 375 tons and the starting duty is very high, principally owing to bearing friction. About 15,000 lb. at 1 ft. radius is required to start the section after a shutdown of a few hours. The mass inertia prolongs the starting load, as the 375 tons of evolving parts are made up almost entirely of 5 ft. drums. The section can be started by the direct-current motors alone by a special switching arrangement which puts the two motor armatures in series, thus relieving the load on the turbine generator. The alternating-current motor for starting and running up to 80 ft. per minute allows for the adjustment and renewal of "felts" or repairs on Sunday without operating the 500-kw. direct-current turbine.



The Evolution of Paper Machine Drive from all Mechanical to Sectionalized Electrical

The paper now goes to the calender, which is made up of ten polished steel rolls in a vertical stack, with a 100-hp. motor directly connected to the bottom roll. The paper goes to the top of the stack and passes in and out between the rolls to the bottom where it emerges a bright, smoothly finished sheet of paper.

The reel just beyond the calender rolls up the product into units weighing about 1½ tons. While not



Paper Machine from Dry End Showing Motors on Calender Reel and Rewinder

affecting the nature of the paper, this unit has also to be intimately tied in as to speed with the other sections. The entire course through the paper machine takes about forty-five seconds.

These reels of paper are lifted by means of an electric parallel-motion hoist to stands, from which the paper is run through the slitter, which trims off the edges and slits the paper into two or more parts. The rewinder now rewinds the paper on paper tubes with metal ends that are adapted to the printing presses on which the paper will be used. It is usual to make two 73½ in. rolls, each weighing about 1,400 lb. The rewinder is driven by a 30-hp. motor with speed control by means of a rheostat in the field of an alternating-current-motor-driven direct-current generator in the basement. The trimmings from the sheet and other "broke" resulting from various causes and put through a heater in the basement, which reduces the wet or dry broke to pulp that can be returned to the system at the machine chest.

The commercial rolls are now taken to the finishing room, where they are securely protected by heavy wrapping paper made from the rejections of the sulphite and ground-wood mill.

Sectionalized Paper-Machine Drive an Achievement of Note

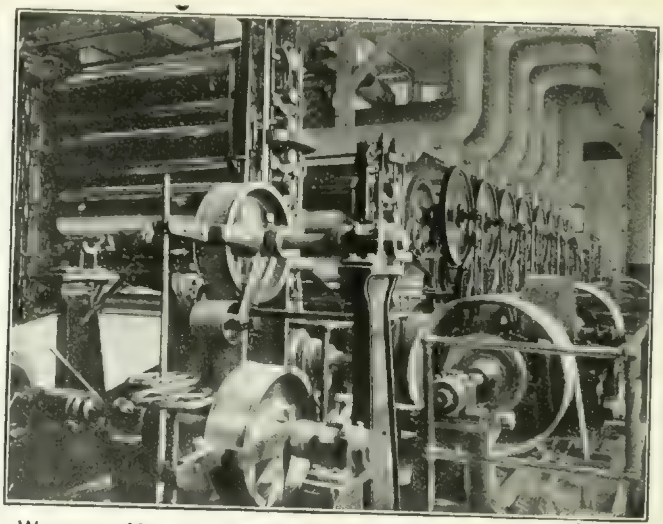
Sectionalized motor drive for a paper machine presents one of the most exacting and complex of the thousands of special applications of electric motors to industrial arts.

(a) In order to compete it must use less power, must save space and must cost less to maintain than the conventional mechanical-line-shaft drive.

(b) In order to operate successfully it must allow for a wide range of speed in paper production. It must be easily adjusted for "stretch or draw" between the sections and must hold that adjustment unchanged either by creepage or hunting. It must enable the operator to slow down or stop any section without disturbing the others. All its members and attendant control features must be sturdy and self-reliant to operate where inspection is possible only at 160-hour intervals.

All these rigid specifications are met on these machines as they have been on many others.

(To be concluded, with explanation of the operation of the drive and tables of motor drive details.)



Wrapper Machine from Dry End Showing Line Shaft Through Cone Pulleys

LINK-BELT COMPANY ISSUES NEW BOOK ON ELECTRIC HOISTS

The Link-Belt Company of Chicago and Philadelphia has recently issued a very comprehensive and instructive book on "Electric Hoists and Overhead Cranes". It is not only profusely illustrated with photographs of actual installations showing some of the most recent Link-Belt Electric Hoist applications, but with line and wash drawings, the subject of proper installation and efficient operation is fully covered.

Going further than the usual "catalog", this new book tells, in print and picture, of the practices and methods employed by users in widely divergent fields.

For instance, the practices of a sewer contractor in Maryland, who used a hoist for removing dirt — and the methods employed at a ship building plant in Texas who employed the same means for moving and placing timbers, is illustrative of the wide range of activities covered by this comprehensive book.

Copies of the book, called "Book No. 480", are obtainable from the Link-Belt Company's headquarters in Chicago or Philadelphia, or from any one their many branch offices.

HOW ARE YOU?

"George, how are you?" exclaimed a business man, as a fellow business man entered the office. "Haven't seen you to speak to you for months. Why don't you come around oftener?"

"Why don't you, Jim?"

"Tied down to business, George; that's the only reason."

"Same, here. Wouldn't be over now only that I saw in the Banker and Tradesman that you were in a bit of trouble. Came over to see if I could give you a friendly hand."

What a friend was that. Came because his friend was in trouble in the financial world.

No doubt there were others, scores of so-called friends, who shrugged their shoulders when they learned that financial trouble had singled the business man out, the while congratulating themselves that they were not involved, men who had dropped in from time to time, glad to accept the proffered cigar or go to lunch with Jim, but it was George, who rarely had time to come near, who came to the rescue.

It would be a dreary world were it not for "Angeline" and "George." It is such who renew one's faith in humanity. —Ex.

NEWS FROM ABROAD

(A review prepared for Pulp and Paper Magazine by Dr. P. Barthalow

The Portuguese Wood pulp Market

The market for cellulose and woodpulp is so limited that there is readily no market in the general meaning of the word. All imports are made without the middle men, for the Portuguese paper mills cover their requirements by direct purchase from foreign producers. This state of things should be of interest to export houses in other countries. There is only one mill which is occupied with the manufacture of pulp from wood. The production of this mill, which only manufactures dry chemical pulp had an output during the years from 1914 to 1920 of the following quantities:

1914 .. .. 3354 tons	1918 .. .. 3806 tons
1915 .. .. 3631 tons	1919 .. .. 3127 tons
1916 .. .. 3656 tons	1920 .. .. 3676 tons
1917 .. .. 3867 tons	

—Papir Journalen, March 28, 1922.

Dean's "Paper Makers Directory of All Nations" lists Caima Timber Estate & Wood Pulp Co., Estarrija, as manufacturing sulphite pulp with a capacity of 75 tons (dry) per week.

The Paper Industry in India

Norwegian Foreign Office for Trade has published two reports on the condition of the paper market and of paper making in India. The market conditions are generally unfavorable. From January 1, 1922 the market, especially for manufactures, showed an improvement, but this state of betterment did not last. Political factors and the scarcity of money were alike responsible for the conditions in the markets, and purchases are made under the influence of extreme caution, for the political situation is full of risks. Although the visit of the Prince of Wales raised optimistic anticipations, and imports business can be estimated at no more than the normal quantity of goods and that after the taking of the greatest precautions. Pamphlets are published dealing with the striking tendency of workmen in conjunction with others who demand high daily wages. Observers of these strike movements expect action of the men. A money shortage in Bombay has caused the rumor that a large stock of goods is awaiting shipment, and shown the impossibility of transportation, and the Indian import houses complain strongly of this stringency.

Wood Pulp Market in Uruguay

(Norwegian Consular Reports)

Papir-Journalen February 18, 1922.

The two paper mills of the country consume about 1800 to 2000 tons of dry wood pulp a year. The annual consumption of the most important mill, Fabrica National de Papir, is estimated at the present time as follows: Bleached sulphite, 150 tons; strong sulphite, 600 tons; strong sulphate, 400 tons; white mechanical, 200 tons; brown mechanical, 250 tons.

It must be taken into account, however, that during the war, and the year following, the consumption of pulp declined to a considerable extent, since it was found much cheaper to use waste paper, old newsprint, etc. It is therefore evident that the more normal prices will lead to an increased consumption of cellulose and wood pulp. Prices have steadily fallen since September of the preceding year when contracts were closed at the following top prices: Strong sulphite £64. per ton; bleached sulphite £95. per ton; strong sulphate £50.10 per ton; white mechanical £42.10 per ton; brown mechanical £32.10 per ton. All c. i. f. Montevideo.

Amercian and Canadian pulps have for sometime, practically disappeared from the market, owing to the inordinately high exchange value of the American dollar (about 150 Uruguayan pesos to two American dollars) which renders deliveries impossible.

Austrian Paper Market

The circumstances of the time have changed all the older concepts; no longer do we allow ourselves to speak of a "market situation". In Austria the market and business position are governed by the rate of exchange. The crown loses value day by day and year by year.

The business of the paper mills, nevertheless, is good. Demand is active in spite of the high prices, which is to be attributed in a great measure to the fact that the home prices are still lower than those in foreign countries. The market in paper goods, clothes, papeteries, etc. is dull, with a marked falling off in business owing to the costs of production, while exports are moderate, owing to the well known restrictions and obstacles. The paper industry as a whole suffers from the business stagnation. A few mills are busy, but since prices on the world's markets have been reached, and partially exceeded, new orders are not coming in. Prices are also fluctuating, so that it is impossible to quote a fixed market price. Costs of production have risen because of the higher prices of raw materials and wages. At the present moment German competition is felt very much, but it is believed that it will become sensibly weaker. However, it is expected that the demands of the workmen will be modified and that with a better exchange value of money, will ensue a slow decline in the prices of paper.

Course in Paper Testing

Christiania. —At the School of Commerce from the middle of March a course of instruction will be held to teach the higher pupils the methods of paper testing. A class composed of exporters and wholesale dealers will also be admitted to the school. The course will cover from 4 to 6 weeks with about 5 hours of work weekly. Instruction includes among other things, microscopical tests, determination of weight, tearing strength, ash content, strength, sizing fastness, fat content, wood pulp content, etc. The course is directed by Mr. Bruff, doctor of engineering chemistry, and will be carried out in the laboratory of the school, with a special equipment of samples, instruments, chemicals and all necessary apparatus.

A continuous course under Director Bruff has also attracted great interest, and is being taken by visiting and foreign scholars during the afternoon hours. Requests for further details should be addressed to Mr. Bruff. —Papir-Journalen, November 3, 1922.

Make it possible, by your straight, clean, kindly lives and Christ-like characters, for those you love to become Christians.

THE WOODLANDS SECTION

A TIMELY APPEAL

Mr. E. J. Zavitz, Provincial forester, begins a circular letter to the editors of Ontario by declaring that "we need your co operation to help save Ontario's forests from burning."

That appeal should find ready response at the hands of every editor and every newspaper in the Province.

Already millions upon millions of dollars worth of timber and wood has been destroyed, and unless decidedly better care is taken other millions will follow in the frightful waste already recorded.

Every tree destroyed in a Northern forest means less of revenue to the Province and brings nearer the day when the most drastic measures will have to be taken to prevent the careless starting of fires.

Not just now, but within the next few years every cord of wood standing on stump in the Northern forests will be worth four or five dollars to the people of Ontario.

Less than twenty years ago forest wood was worth about twenty cents per cord. At that time wood could be purchased by mills in the East for five dollars per cord as a maximum price. Similar wood has brought thirty dollars per cord within the past few years, and even now the Eastern mill that can buy wood delivered at eighteen to twenty dollars per cord counts itself in clover.

Our forests constitute the greatest source of revenue the Province has before it. The Government must itself give greater protection, while the individual who is responsible for fire from carelessness should be treated as a criminal.

Arson is punishable by heavy penalty. The man who allows a fire to occur in the forests through negligence or carelessness is a major firebug, for he may be responsible for the loss of hundreds of thousands of dollars of useful wood.

Every class of tree that grows in these Northern forests is valuable, for there is not one not adaptable to the manufacture of some class of paper.

Papers in the East located far from the forests will not realize the necessity for adopting Mr. Zavitz's suggestion as will those of the North country. Neither will the ordinary citizen in the East realize what loss is involved in an extensive forest fire. They must be wakened to the crime of forest burning. The forests are the greatest asset the Province has. They can be made, by proper management, to prevent direct taxation ever being imposed upon the people of Ontario. —Editorial in Port Arthur News-Chronicle.

CHICAGO INTERESTS IN B. C. PULP FIELD

If negotiations which have been going on for nearly a year are concluded satisfactorily, the Seaman Paper Co. and allied interests in Chicago will spend approximately $8,000,000 in the establishment of a pulp and paper mill on the north shore of Burrard Inlet.

E. J. Young, of the Bridingham Young Lumber Company, of Madison, Wis., is the owner of the timber limits to be used by the Seaman if the deal is settled. Most of the timber limits to be used by the Seaman if the deal is settled. Most of the property is on the North Arm within a few miles of Vancouver. It is estimated that the mill, as planned, will have a capacity of 200 to 300 tons daily.

Power for the big plant may be obtained from the Bridge River Power Company, which has extensive development projects under way in the Lillooet country. Bridge River is reported to have a power capacity of 400,000 horsepower continuously, but only about one quarter of that will be utilized by the company at first. The pulp mill will require about 50,000 horsepower. The Bridge River Power Company has been holding development in abeyance pending the assurance of one big customers, and that role is expected to be filled by the new Seaman mill.

SIR CLIFFORD SIFTON ON REPLACING FORESTS

That the millions of logs taken from the Canadian forests this spring represent a destruction of 'capital' and that the Governments should spend large amounts on restoration without computing costs on an interest basis, is the interesting contention of Sir Clifford Sifton in a letter to the Canadian Forestry Association.

'In my judgment the money spent in planting trees should not under any circumstances be regarded as an investment upon which interest, either simple or compound, should be calculated.

'I regard the cutting down of merchantable trees as a destruction of capital and I would think it was the plain duty of the Government which permits the cutting down of such trees and derives a revenue therefrom, to insist on the replanting of at least two trees for every one cut down and that such cost should be taken out of the forest revenue and regarded as a permanent charge upon that revenue.'

A POOR EXCUSE BUT A WITTY ONE

The diminutive size and slow growth of a plantation of young trees that the Briitsh statesman Joseph Chamberlain had set out with much labor were the source of considerable amusement to him and his son Austen. One day, says the Tatler, Chamberlain gave a large party, and his son arrived late.

"You are most unpunctual," said the father reprovingly.

"Yes, I'm sorry," replied the culprit, at a loss for a moment for a suitable excuse. Then his face brightened, and a twinkle came into his eye. "Couldn't possibly get here before father," he said, "I was lost in your new wood!"

1,500 FOREST RANGERS FOR QUEBEC

Quebec, May 11. —It was announced this morning that the number of forest rangers in the province had been increased. Instead of 1,200 men being employed in co-operation by the Government and private firms there will be more than 1,500 forest fire fighters on duty within a few days. The fact that there is still snow in many sections of the country gives rise to the opinion that there will be no serious outbreaks before a fortnight or three weeks.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties and Testing of Materials

A-11. Paper Filler. U. S. patent 1,424,306 W. Hoskins. Jan. 8, 1922. Powdered calcium sulphate is washed with a solution of soap. Reaction takes place and the sulphate is coated with a superficial coating of an insoluble soap. Other substances, which are only slightly soluble in water and which possess the property of forming insoluble soaps, may also be used for this purpose. The resulting products may be used to good advantage as a size in the manufacture of writing papers.—I. G.

A-11. Loading and Filling Substances and their Retention Properties. Carl C. Schneider. **Paper** 31, No. 11, 32-33 (Jan. 3, 1923). Practical observations on loading and filling materials.—A. P. C.

A-12. Use of Corn Starch in Paper Making. Hans Wrede. **Papierfabr.** 20, 1429-1344 (Oct. 14, 1922); **Paper Ind.** 4, 1368-1371 (Jan. 1923); **Paper** 31, No. 12, 11-14 (Jan. 10, 1923). A general description of the methods of using starch and of its advantages in the following cases: for sizing writing and printing papers, as a filler, for surface sizing, for art printing papers, for coating art papers (along with casein), and as an adhesive in the manufacture of pasteboard.—A. P. C.

A-13. New Method of Measuring Colors. Ismar Ginsberg. **Paper** 31, No. 16, 7-10, 33 (Feb. 7, 1923). An explanation of Ostwald's color theory and of the manner in which it is used for classifying, identifying and measuring colors.—A. P. C.

K — Paper Making and Equipment

K-8. Production of color mixtures containing oils, fats, or waxes in an unsaponified condition for the manufacture of marbled or glazed paper and the like. Ger. patent 367,805. **Papierfabr.** 21, 71 (Feb. 4, 1923). The color mixture containing oils, fats, or waxes and a color is subjected to a very intimate mixing process. —J. P. L.

K-8. The coloring of paper stock color lakes. Emil Heuser and Hans G. Behr. **Papierfabr.**, 21, 1-6 (Jan. 7, 1923). The absorption of acid dyes is approximately the same for loaded paper stock as for stock free from loading material. Basic and substantive dyes, however, are more readily absorbed by loaded stock. With basic dyes, the color is most firmly fixed by magnesium silicate; next in order come calcium silicate and finally aluminum silicate. With substantive dyes the greatest absorption occurs with aluminum silicate; then, in order of their effectiveness, come calcium silicate and magnesium silicate. The silicates were prepared by adding to water glass either aluminum sulphate, calcium chloride, or magnesium sulphate. Acid silicates absorb basic dyes the best. Substantive dyes can be used, however. In general, increased retention of the filler is effected by the choice of the proper dyestuff. Experimental data are given in detail. J. L. P.

K-10. Degree of Dissociation and Unsaponifiable Matter in Rosin Size. A. Haug. **Wochbl. Papierfabr.** 54, 313-315 (Feb. 3, 1923). The effects of small amounts of different salts of the alkali and alkaline-earth groups on solutions of sodium resinate, at different concentrations, were studied. Solutions of sodium resinate, containing less than 10 grams of rosin per liter, are precipitated by salts at approximately the concentration of 1 gram per liter. Calcium salts have a greater flocculation effect than sodium salts. The effect of hard water on the composition of rosin size is shown. (The concluding article of a series published under this title in **Wochbl. Papierfabr.** 53, 3935-3938 (Nov. 4, 1922); 54, 25-27 (Jan. 6, 1923); 54, 243-245 (Jan. 27, 1923).—J. L. P.

K-10. Simultaneous Coloring and Sizing of Paper Stock. Ger. patents 368,191 and 368,192. **Papierfabr.** 21, 81-82 (Feb. 11, 1923). The soluble or finely divided acids obtained by treating coal with nitric acid, or air and nitric acid, are added to the paper stock. Lake-forming salts or hydroxides are subsequently added to produce the corresponding lakes. The second patent covers the use of all fertilized substances rich in humic acid in place of the coal. J. L. P.

K-12. Economy of Steam for drying machines. K. L. Thunholm. **Svensk Pappers Tid.** 25, 7 (Apr. 15, 1922); 24 (Apr. 15, 1921). By calculating the quantity of heat for the driers of four Fourdrinier machines two of which were provided with an installation for pre-warming and ventilation, the saving of heat, or gain in consumption of steam, amounted to about 39 per cent. The actual consumption of heat per Kg. of paper by the pair of machines provided with the installation was 1,400 calories, as compared with 2,400 calories during the period of the experiment before the heating system was installed, while the heat losses before and after the installation, were 1,560 and 560 calories. The gain in heat estimated for the two machines during the short period of the experiment was 1,300 calories; during the long period 1,600 calories, the difference being due to the lower outside temperature.—P. B.

K-12. Drying roll for paper machines. H. H. Vaughan, assignor to Dominion Bridge Co., Ltd. Can. patent 225,946, Nov. 14, 1922. Drier felts are eliminated. The drier is provided with a set of perforation connected by pipes (one for each perforation) to a centrally located pipe which is connected to a suitable suction pump. The connections are such that any given perforation is connected to the suction immediately before it reaches the web on the drier, and the vacuum is relieved as soon as the perforation is no longer in contact with the paper.—A. P. C.

K-19. Production of fancy figured paper. Albrecht Blomberg. Ger. patent 359,588. Addition to Ger. patent 295,565. **Wochbl. Papierfabr.** 54, 172 (Jan. 20, 1923). A covering substance as wax, rosin, etc., is applied to the sheet, the color is then pressed in and, after drying, the covering substance is removed by a solvent or mechanically.—J. L. P.

K-23. Production of white or variegated shaded paper or board. Ger. patent 367,868. **Papierfabr.** 21, 71 (Feb. 4, 1923). Glue or starch products are used in the process as binding materials after being subjected to a very intimate mixing.—J. L. P.

IMPORTS OF PAPER, PULP AND CARDBOARD INTO BRAZIL

By DIRECTOR BIRKELAND, RIO

Papir-Journalen, March 13, 1923.

In Brazil very little of the better sorts of paper are manufactured by the home mills, but, on the other hand, there has been a considerable development of the manufacture of kraft packing paper and cardboard. The paper mills have had a powerful incentive or support in the higher duties of 1919, and these have furnished a strong basis for an increase in domestic production.

As raw material, imported cellulose and woodpulp are used, mixed with waste paper. There has been an investigation looking toward the manufacturing woodpulp from native trees, such as bamboo, the fiber of banana wood, sugar cane waste from the sugar factories together with sape, a sort of grass or straw, which is found in abundance over all Brazil, although hitherto it had not gone beyond the experimental stage. While there is no reason to suppose that imports will cease, the very large imports of newsprint and print paper, and the sums of money that leave the country for this cause, will insure the most strenuous attempts and experiments to manufacture cellulose and woodpulp from inland material. Considering the enormous forest area and plant riches, and the total imports in 1920 of 46,278 tons of paper and boards, and 9040 tons of cellulose and wood pulp, it is obvious that Brazil will try to reduce foreign imports. As a starting point may be mentioned the preparations for a technical laboratory for plant products in combination with theoretical demonstrations under the direction of the State which covers the expense. The idea of an institute of this kind is taken from the Forest Products Laboratory, Madison, U. S. A. Such an institute will be of great interest to the textile industries, manufacture of dyestuffs, etc.

During 1919-1920 imports included the following grades:

	1919	1920
Cigarette paper	379,528 kg	585,587
Wall Paper	31,604	14,156
Writing	2,453,528	2,868,939
Print	30,875,775	34,702,291
Paper for various uses	11,385,484	6,079,534
TOTAL	57,814,522	55,317,605

Before the war Sweden and Norway occupied the most important position as exporters of print paper, which steadily declined during the war, partly because of high quotations on the home markets and partly because of difficulties of transport. The United States took the lead, since prices from that country were more advantageous, and freights were specially low. In 1919, and 1920 Sweden and Norway recovered their place, and the quantity of exports are now approximately what they were. In 1920 imports of print paper were distributed from the following countries: Norway 9,228,106; Finland 8,888,851; Sweden 6,913,649; U.S.A. 5,254,191, almost exclusively from Europe. Of late years the States have shipped a large quantity of newsprint, but, because of the rate of exchange these imports have nearly ceased. Germany and Finland have steadily come more and more into the market, and with Sweden and Norway are the chief exporters of newsprint.

Most of the Argentine newspapers buy paper in reels for direct shipment, but also get their supplies from import houses, for with small orders this is the more convenient way. The smaller newspapers do not generally buy direct, but naturally higher prices are paid for paper from Argentine stocks than for deliveries from Europe. As a matter of fact contracts are made for weekly deliveries of certain quantities against cash payments over a long space of time. Machine glazed paper is preferred, and some newspapers use calendered paper. Newsprint in sheets is traded in by most import houses, and sold from stock to the smaller newspapers. Most of this paper is exclusively supplied by European mills, since the sheets are not suited to the fast running North American machines. The weight which sells best is of 46 grams per square meter. Only two local mills produce newsprint in sheets — LaArgentina and ElFenix. For the moment, however, prices of the imported paper are so low that this production has stopped. Nearly all kinds of paper that are used in Europe for the printing of cheap books, periodicals, prospectuses, pamphlets, etc., also find a market in Argentina, but the print paper which is sold in the largest quantities is the so-called "papel para obras", which is a grade between the better quality of machine glazed print paper and the cheaper sort of writing paper. A large portion of the imported writing paper is of a cheaper quality than that which is now manufactured in Norway under the name "bond" or "bank" paper. Over a great part of South America writing paper with watermark is in general use, since buyers have the conviction that watermarked paper is superior to others in quality. This is also manufactured in Argentina. Of other sorts of paper which are sold and which are of interest to manufacturers can be named; copy paper, unglazed white and colored tissue papers, pergamyn, and greaseproof. Some firms import kraft of thin and strong quality. Of glazed and unglazed boards it is especially the thinner sheet — from 100 to 150 per kg. — which is in demand. Calendered wood-free print paper, writing and illustration print, copy paper, pergamyn are packed as a rule in boxes, but news in sheets, print containing ground wood, tissue paper, greaseproof and cardboard are crated. As a rule the packing is stipulated in the sales contract.

Only one of the foregoing papers, packing paper, pays a duty by weight. All the others, except white newsprint, pay an ad valorem duty of 20 per cent. These values are fixed in the tariff schedules. Ordinary newsprint is now admitted duty free, but if it weighs over 56 grams per square meter it is of tissue paper, newsprint and white woodcontaining cardboard is characterized as very small, white "papel para obras", and writing paper appears to be in considerable quantity. Prices are extremely fluctuating; for newsprint in sheets about 13 cents per kg. f. o. b. consumer's house, which is little more than 12 cents per kg. c. i. f. Large orders are said to be placed in Germany at 500 marks per 100 kg. c.i.f. However, it is very evident that Germany will have some difficulty in filling these contracts, and that many who have bought marks with which to pay for this paper will have a dangerous monetary speculation on their hands instead of a profitable supply of paper.

Our thoughts may be prayers. There are moments when, whatever the attitude of the body may be, the soul is on its knees. Victor Hugo.

The greatest events of an age are its best thoughts. It is the nature of thought to find its way into action.

COMMISSIONER EGAN TALKS ON SOUTH AFRICA TO PAPER MEN

Representatives of paper manufacturers, members of the Canadian Pulp and Paper Association, met Mr. W. J. Egan, Canadian Trade Commissioner, South Africa, at the offices of the Association, Montreal May 9. The object was to discuss the possibility of extending the trade in paper and paper commodities in that country.

Mr. Egan pointed that South Africa is a growing consumer of paper, and that except for the output of one small wrapping mill, is obliged to import all its requirements. Imports come from Canada, the United Kingdom, Scandinavia and Continental Europe. Except in the case of wrapping paper of the kind produced locally no duties are imposed on paper imports. Canadian paper has always stood in high favor and there is a marked preference for dealing with Canadians wherever possible. Canadian kraft wrapping is making marked progress there. Canadian newsprint is most acceptable but is losing ground on account of unwillingness on the part of Canadian mills to compete in price with Norway and Sweden, which undersell Canadian mills to an amount, in some instances, equivalent to $15 a ton. Canadian bond papers are well thought of and would probably be adopted by the Government for all official use if a suitable price were quoted. Rotogravure paper is coming into use and more of it will soon be required and there is no reason why the supply should not be drawn from Canada. Shipping facilities from Canada are adequate and no difficulties are now being met with in that particular.

The Commissioner's conclusions are:

(1) That the South African paper trade is open to Canada whenever we are prepared to meet price competition.

(2) That local representation is essential to the building up of a successful connection in the country.

(3) That the effort should be to establish a permanent trade rather than a temporary one based upon the necessity of disposing of surplus products when the home market is dull, and to this end he recommends that when a connection has once been established exporters should make a practice of providing for the requirements of their export markets, regardless of how it may temporarily affect their home market. Mistakes have been made in the past by offering commodities with the implied understanding that a continuous supply could be obtained as and when desired only to disappoint buyers later on. This practice leads to dissatisfaction and interferes with making a permanent market.

In view of the Conference, the Association prepared a special report dealing with the Canadian trade in paper with South Africa. This states that in the fiscal year ending March 31st, 1923, Canada's exports of paper to South Africa were valued at $1,060,000, which was about 20 per cent greater than the total for the previous twelve months. In 1914 our exports were valued at $441,723 so that considerable development has taken place during the past eight years.

While our exports to South Africa are not large in comparison with those to some of the other countries, they cover a wide range and include newsprint, wrapping, book, bond writing and roofing papers and paper board in addition to bags and cartons and other manufactures of paper.

Our greatest trade with South Africa was done in 1919 and 1920 when business was good and European competition was practically absent. Like all other countries, however, South Africa suffered from the after-the-war depression, which with keen European competition reduced our exports considerably.

The following tables show the exports of various grades of paper from Canada to South Africa for the past four or five years. Figures are for Canadian fiscal years ending March 31st.

Wrapping (Kraft)	Cwts	Value
1920	26,644	$202,484
1921	54,015	624,193
1922	9,834	85,805
1923	25,176	202,773

Our exports of wrapping paper for the twelve months just ended were almost equal to those in 1919-'20 and a good recovery was made from the heavy decrease in 1921-22.

Newsprint. — Our exports of newsprint have not fluctuated during the last few years to the same extent as exports of other grades of paper. The totals are as under:

	Tons	Value
1919	5,290	$ 406,401
1920	4,226	359,581
1921	7,782	1,031,408
1922	6,776	681,278
1923	7,718	688,095

The total consumption of newsprint in South Africa is reckoned at 9,000 to 10,000 tons, and the Canadian manufacturers continue to hold a fair share of the business although Scandinavian newsprint is being offered at low prices.

Book, Bond and Writing Papers. — Exports under these headings have made a poor showing in the last two years although business in bond and writing papers improved to some extent during 1922.

Figures are as follows:

	Book Paper		Bonds and Writings	
	Cwts	Value	Cwts	Value
1920	5,774	$51,725	1,373	$13,135
1921	5,886	70,748	2,223	37,781
1922	1,119	15,250	348	4,880
1923	24	189	722	9,132

Paperboard. — Canadian exports of paperboard to South Africa showed a considerable increase in the twelve months ending March 31st, 1923, over the previous year and were almost equal to the 1919 figure. The Department of Commerce does not record quantities but the high value in 1921 was no doubt due to higher prices rather than to large quantities: 1919, $114,030; 1920, $124,735; 1921, $244,546; 1922, $56,167; 1923, $105,159.

Other Grades. — Canadian exports of other grades of paper to South Africa are given in the following tables:

	Bags, Boxes & Cartons	Roofing Paper
1920	$ 4,836	$51,453
1921	21,054	12,860
1922	12,610	29,759
x1923	15,619	19,817

	Wall Paper rolls	Other Paper & Manufactures	
1919	255,701	$22,030	$191,743
1920	266,321	24,444	15,688
1921	234,545	34,697	67,178
1922	46,148	9,467	6,897
x1923	16,636	2,595	8,726

x Figures are for 11 months only, to February 28, 1923. March figures not yet published.

SAFETY ON THE STREET

One of the most distressing sights that meet the human eye is to see a child run down by a street car, an automobile, or by a truck or wagon on our public streets. The injury is not always fatal, of course, but very often it results in the loss of a leg or arm or in some physical disfigurement the child must bear through all its life. The grief of the parents is heartbreaking and is shared by friends and neighbors. Every one loves children and every one suffers when a child meets an injury. What is the answer? How may we prevent street accidents? As citizens, we must do all that we can to assist in the enforcement of laws governing traffic, and, as parents, we must see that our children are taught habits of safety. One careful parent will do much to encourage an entire neighborhood to observe the a, b, c's of Safety First.

What shall we say when the injured person is a man or woman? The injury may be equally serious and is always shocking and distressing but we have less patience than in the case of a child. To prevent these accidents we must rely on the enforcement of traffic rules and we must see to it that not only do we obey them ourselves, but that we encourage others to acquire the Safety habit. Here is a standard rule: "Look to the left when you start across a street; when you reach the center, look to the right; when you are in a critical position use your common sense and do not lose control of yourself." If the danger is from an auto, stand still and do not confuse the driver by dodging. Never pass behind a street car, auto or wagon without looking to see whether another car or auto is approaching from the other direction. "Keep your head" is a mighty good rule.

There are many unnecessary street accidents. Some of them are caused by slipping and tripping; being struck by projecting ladders, poles, etc. from wagons as they turn corners; material or articles dropping from above. You can easily picture a dozen which you know have caused an injury to yourself or to a member of your family or friend. Most accidents are preventable, if we will use the brains that were given to us, and think Safety.

Owing to the inadequate response to the invitation to visit the mills of Fort William and Port Arthur in July, the Technical Section of the Pulp and Paper Associaton has decided to drop the proposed summer excursion to those points. It was found that members could not get away for the length of time involved. The idea of a summer meeting however has not been abandoned, a proposal being under consideration to hold a meeting in Montreal, with visits to mills in the district.

ODORLESS MANUFACTURE OF CHEMICAL WOOD PULP

Swedish cellulose industries, in general, under the supervision of E. L. Rinman, have completed experiments with the satisfactory results of a newly invented method of producing cellulose, which is proved superior in many respects to the old vile-smelling methods. Rinman works with lyes that are free from sulphur, and succeeds in producing chemical products of high value from the organic substances which have been dissolved by the waste lye; while the sulphate method uses sulphur bearing lyes, and consumes as fuel the organic substances contained in the waste lyes; though not unlike in the actual production of cellulose, the two methods differ essentially in the composition of the boiling solvent, as well as the further treatment of the waste lye.

Dr. Rinman has succeeded in making the manufacture of cellulose entirely odorless by using sulphur-free lye, thereby solving a most vexing problem which innumerable efforts in the past have failed to solve. There is, at the same time, great economic advantage in being able to utilize the large amount of organic substances, comprising 50 to 65 per cent. of the volume of the wood, which escapes during the boiling of the cellulose and passes into waste lye.
From Canadian Chemistry and Metallurgy, February 1923.

Book Reviews

PRINTING IN ASIA

We have received with much interest the first issue of the Asian Printers' and Stationers' Annual, Diary and Directory published by Cama Norton & Co., Bombay India, and edited by M. N. Cama B. Sc.

According to the editors' foreword this prohibition was conceived and published in three months.

Varied information of interest to printers and allied trades is given.

Among them is an article on the Press in India by R. N. Vatchighandy, covering its development to date from the first newspaper published in 1780 to the present total of 883 with over 2000 periodicals as shown in table page 11 the varied governmental restrictions and regulations.

There is a table of Printing Presses now at work, showing 3,146 in 1918-19. An account of the Government Printing office of paper, contains some interesting notes and the same may said of the article on "How Foreign Paper Manufacture developed in Japan." The designation of "foreign" being presumably applied to machine made. Japan produced in 1921 238,594 tons of paper. The two largest mills in paper are the Fiji Paper Mill Co. with a capacity of 10,800 tons annually and the Ioma-komai mill of the Oji Paper Mfg. Co., with a capacity 24,000 tons annually. The remainder of the works consists of Diary aind Directory of printing and allied trades with table of useful information to printers and stationers.

We wish the publishers every success in the prosecution of this work.

A large part of the work of philanthropy and of the churches, as well as of the state, is an attempt to undo the work of the saloon.

PULP AND PAPER NEWS

K. S. Maclachlan, mills superintendent of the Lincoln Mills, Limited, at Merritton, Ont., has been appointed vice-president of the company. Mr. Maclachlan is widely known in the Ontario paper trade and his promotion is a popular one.

At least one Ontario cover paper manufacturer has adopted the new size of cover paper which has become standardized across the line. One of the mills has now started to ship their product in 23 x 33 sheets, which conforms to the American size and which has been adopted from the standpoints of economy and convenience. The old size which has existed for years was 22½ x 28½ inches. Demi cover, 20 x 26 remains unchanged.

W. H. Craft, representing Wiggins, Teape & Co., and Alex. Pirie, Limited, two widely known paper houses in London, Eng., called on the Toronto paper trade last week.

O. H. Moore, general manager of the Hinde & Dauch Paper Co., of Canada, Limited, Toronto, has returned after a business trip to various cities in the States.

That the long price list put in use some time ago by the paper jobbers at the instigation of the printers is not altogether popular is indicated by a letter received by a Toronto wholesale paper merchant last week from an Ontario printing and publishing house. "May we be permitted to say, "the letter says, "that the long price list you have been issuing for some time is an unmitigated nuisance, and the invoices you send out with deductions and plus and whole rows of useless figures are an annoyance, pure and simple. We were never in favor of the proposed change, and having tried it feel satisfied that the majority of the printers outside of the cities would much prefer to revert to the former system of net prices. So keenly do we feel on this matter that we are prepared right now to transfer the bulk of our trade to any paper house that will issue a net price list."

Barber-Ellis, Limited, head office Toronto, have opened up a warehouse in Montreal at 230 McGill Street where they will carry in stock the Barber-Ellis line of envelopes, papeteries, writing tablets, etc. The new warehouse will be in charge of Mr. Reid, who has served that territory for a number of years.

N. E. Wainwright, who is handling the output of the Port Arthur mill of the Provincial Paper Mills, Limited, has just returned from a business trip to Winnipeg. It is understood that Mr. Wainwright will take up his permanent residence in Oakville, near Toronto.

Maj. R. B. Herron, of R. B. Herron & Co., Tionage, Ont., who took out several thousand cords of pulpwood for the Spanish River Pulp and Paper Co., Ltd., is embarking in business for himself in the wholesale lumber line in Toronto and will handle all kinds of forests products, including piling and pulpwood.

Charles V. Syrett, head of the Victoria Paper and Twine Co., Ltd., Toronto, has drawn the attention of the Ontario Motor League to several dangerous bridges and street intersections in and around Toronto with a view to having them properly looked after in the interests of motorists and the general public.

Howell & Co., Limited, Toronto, who represent Jebb Brothers of Glasgow, Limited, dealers in rag and paper stocks, report the market in these lines as picking up considerably of late and that prices are showing a firmer tendency after a period of weakness. George A. Howell, president of the company, was recently elected honorary president of the Young Men's Club of the Toronto Board of Trade.

Cameron & Fraser, whose wholesale paper jobbing warehouse has been at 112 Bay Street, Toronto, have moved to new premises at 47 Simcoe Street, that city, where the firm have ten thousand square feet of space. W. M. Cameron, of this firm received the congratulations of many friends in the paper trade last week on the occasion of his marriage to Miss Morgan, of Prince Rupert. The marriage took place in Old St. Andrews Church, Toronto. F. G. Russell, formerly of Kilgour Brothers, has joined the city sales staff of Cameron & Fraser.

The following changes in the staff of the Abitibi Power and Paper Company, Limited, Iroquois Falls, Ont., have been announced: H. G. Buncke becomes chief engineer, who takes the place of J. T. Jaeger, who goes to Thorold, Ont.; Roy Shaver, plant engineer; W. B. Crombie, chief construction engineer, retaining his position as resident engineer on the Abitibi Railway. W. H. Potter is transferred to the Abitibi Transportation and Navigation Co., as superintendent, and retains control of all railway operations in the Abitibi yards.

Firemen fought a stubborn blaze last week in the wallpaper warehouse of Stauntons, Limited, 54-56 McMurrich street, Toronto. The damage done to the building was placed at $1,500. Edmund G. Staunton, president of the company stated that there was a large stock of wallpapers in the structure most of which was destroyed by fire or water. The loss was covered by insurance.

Reid Brothers, Limited, London, Ont., whose paper box plant was burned a few months ago, have called for tenders for a new factory. The building they have planned is one floor and basement, 150 x 70 feet and will be built on a lot 150 feet square so that they will have plenty of light on both sides. The site is on a railway siding in the city's industrial area.

Two of the officials of the Spanish River Pulp and Paper Mills, Col. C. H. L. Jones and George R. Gray, of Sault Ste. Marie, Ont., celebrated their birthdays during the month of May. Col. Jones was born at Montreal on May 1, 1876, and Mr. Gray was born at Coldwater, Ont., on May 4th, 1865.

The Spanish River Pulp and Paper Mills are shipping large quantities of pulpwood from their Espanola mill to their plant at Sturgeon Falls to help fill their orders. The Espanola mill is unable to grind wood on account of the lack of power consequent upon low water.

NEW BRUNSWICK NEWS

More pulpwood was lost in the swollen waters of New Brunswick during the 1923 freshet season that for any freshet season in New Brunswick in the past. In most of the streams and rivers, large quantities of pulpwood which has been piled on the banks presumably far from possibility of being sent adrift, were torn loose, the wood being borne rapidly to the sea.

On the Bonny River, many hundred cords all piled some distance from the shore were the prey of the onrushing torrent and were sent into the Bay of Fundy. Along the St. John River, it is not possible to estimate the damage wrought by the freshet on the pulpwood piled along the banks and awaiting shipment by water to St. John and thence in many cases to the United States or different sections of eastern Canada. Accompanying the freshet was a very heavy wind storm which toppled the huge piles.

Along the St. Croix River the damage to pulpwood was also great. This river was affected to an even greater degree than the St. John River, two dams having been wrecked. Along the Nepisiguit River, Kennebeccasis River, Miramichi River, Restigouche River, Nerepis River, Oromocto River, Tobique River, and in the smaller rivers, many hundreds of thousands of cords of pulpwood were lost.

Among the heavy losers are the Nashwaak Pulp and Paper Company Limited, of St. John, St. George Pulp Company of St. George, Fraser Companies, Limited of Plaster Rock, Bathurst Company, Limited, of Bathurst, and a number of pulpwood operators. The height of the flood was so unexpected, exceeding a record breaking flood of 1887, that the pulpwood was adrift and in the sea before efforts could be made, in some instances, to retrieve the wood. There were cases where piles of pulpwood situated over a half mile from the shore on high land were sent adrift, and wood that was piled a mile from the shore on low land fell easy prey to the freshet. In some of the narrow rivers the water was choked for hundreds of yards with pulpwood intermingled with logs.

SPANISH RIVER THIRD BIGGEST

It was learned at the head office in Toronto of the Spanish Pulp and Paper Mills, Limited, that production of newsprint is now proceeding at the highest point in the company's history, being in excess of 700 tons of newsprint a day. As is generally known, the Spanish River Company is the largest producer of newsprint among the Canadian mills, and is third on the continent. The company reports that the demand is well maintained and that the entire output is finding a ready market. The company, at the beginning of this month introduced a new wage scale in all departments, which provided an all-round increase of five cents an hour. Thus far no official report has been received of the progress made in floating pulpwood from the woods to the company's mills, but the spring break-up appears to have come without any flooding, a condition generally favorable to the operators. Pulp supplies are expected to come down without any serious difficulties.

The Canadian pulp and paper companies have responded in a free way to contribute to the exhibit of pulp and paper products in connection with the Canadian exhibition train which will tour France. A representative collection of pulp and paper products is assured.

LABOR ORGANIZATION IN CANADA, 1922

The figures published in the Twelfth Annual Report on Labor Organization in Canada, covering the calender year 1922, which has just been issued by the Department of Labor, show that during the three-year period from 1920 to 1922 there has been a decline in trade union membership in Canada of 101,426, the loss in the last calender year being 156 in branches and 36,699 in members. The total membership of all classes of trade unions in the Dominion at the close of 1922 stood at 276,621, comprised in 2,512 local branches . There are in all 92 international organizations operating in Canada, and between them they have 2,108 local branches in the Dominion, with a combined reported membership of 206,150. These figures indicate six fewer international organizations operating in the Dominion, with losses of 115 in branches and 16,746 in members. There are eighteen of what are termed "non-international" organizations, an increase of three over the year 1921, with totals of 272 local branches and 22,973 members, a gain in branches of eight, but a decrease in membership of 1,507. The number of independent units of trade union organizations has decreased by two, there now being 25 such bodies, the reported total membership being 9,063, a loss of 6,581. The unions commonly known as "National and Catholic" number 106, with a reported membership of 38,335, a decrease in unions of 14 and in members of 6,635. Of the 34 local units of the One Big Union which were in existence in 1921 only one reported, and as the general officers of the body refused to furnish any information as to its standing, all of the non-reporting branches have been dropped from the report the figures recorded above indicate that, although the international organizations had the heaviest decrease during the year 1922, this group represents approximately 74 per cent of the total trade unionistse in the Dominion. The membership of all classes of organized labor in Canada, as reported to the Department for the past twelve years, has been as follows:

1911	133,132	1915	143,343	1919	378,047
1912	160,120	1916	160,407	1920	373,842
1913	175,799	1917	204,630	1921	313,320
1914	166,163	1918	248,887	1922	276,621

Trade Union Membership by Provinces. — The 2,512 local branch unions of all classes in the Dominion are divided by provinces as follows: Ontario, 1,045; Quebec, 456; British Columbia, 235; Alberta, 209; Saskatchewan, 163; Manitoba, 134; Nova Scotia, 147; New Brunswick, 114; and Prince Edward Island, 9.

Other Important Features of the Report. — Besides the statistics furnished, the report gives particulars concerning certain revolutionary labor organizations of recent formation and the doctrines wheih their promoters are endeavoring to propagate in Canada as well as in other countries. The volume also contains much general information as to the activities of organized labor in Canada, as well as references to important labor events both at home and abroad. As a directory of trade unions the report is very complete, containing particulars of every known local trade union in Canada, and also lists of central organizations and delegate bodies, together with the names and addresses of the chief executive officers for the year 1923. A chapter in the report is devoted to an important class of organized wage-earners who are not connected with the organized labor movement, included in which are associations of school teachers, commercial travellers and government employees. In all there are 63 such bodies having a combined reported membership of 81,373.

UNITED STATES NOTES

New York State won a $250,000 verdict when the United States Supreme Court last week declined to review the decision of the New York Court of Appeals in the Taggarts Paper Company case. This litigation has been before the courts for several years. The question involved was the right of the Taggarts Paper Company to interest or a claim growing out of the appropriation by the State of 11,897 acres of land in the town of Webb, Herkimer County. The statute authorizing the appropriation in 1909 gave the company the option to reserve the spruce timber growing upon the land taken upon consideration that the award for damages should not draw interest until all reserved timber had been removed. The company subsequently set up the claim that the provision of the statute denying interest deprived it of just compensation for its land and accordingly transgressed the Fourteenth Amendement to the United States Constitution.

It will require 354,388,000 envelopes to inclose the mail of the Government next year, and as an indication of what these figures mean, the Post Office Department announces that a contract has just been let for 140,000,000 official envelopes for that department alone at a cost of $178,061.

Plans for the erection of a pulp and paper mill near Vancouver, at a cost of $8,000,000, are said to be nearing completion in the offices of the Seaman Paper Company at Chicago. The new pulp mill, which we have a capacity of about 250 tons a day, will give employment to about 1,000 persons. It will obtain its supplies of pulpwood from the pulp lands near Vancouver owned by E. J. Young of Madison, Wis.

The Special Senate Committee on Reforestation last week began an investigation of forestry conditions in the Great Lakes region. Hearings were held at Bay City, Mich., Grand Rapids, Mich., Chicago, Madison, Wis., and Cloquet, Minn. The committee may also hold hearings at Duluth and other places before it disbands for the summer. When it reasonables next fall, it will conduct investigations in the Northwest and on the Pacific Coast.

The Senate Committee left Grand Rapids for Chicago with three outstanding conclusions from their Michigan inquiry. The first of these was that private owners will do little forestation work because of the lack of visible profits. Second, that Michigan holders of cutover land ask more Federal and State aid in the matter of five protection. Third, that persons who have appeared before the committee have unanimously expressed the belief that the Federal government should come into the State and take control of large areas of land for reforestation with the idea that if the government can prove the feasibility of producing timber crops it will blaze the way for private enterprise.

The New York State Industrial Commission's survey of the industrial wage situation in the State during recent months shows that advances in wage scales were the most numerous in the metal industries, in the manufacture of building supplies, and in the paper mills.

Among tourists arriving in New York on the French liner Paris last Saturday was Hubert Biermans of the Belgo Paper Company.

The gypsy moth, which is destroying forests in many parts of the United States, will be fought in New Hampshire by a balloon, which will hover over the affected areas and spray them with chemicals. The balloon, especially constructed for this purpose, and equipped with two powerful motors, will be operated by army aviators, and will go to such districts as are most afflicted by the gypsy moth plague. Experts state that the balloon can cover a far greater area with greater efficiency than would be possible by any sort of land operations. The spraying can be done with accuracy from the air. The balloon, motor-driven, has the ability to maintain a stationary position over a given point for any desired length of time and therefore is ideal for the work it is designed to do.

Due to reports of successful experimentation in the work of reforesting Hawaiian mountain regions from the air, The Department of Agriculture is considering making similar experiments in the United States. A report received by the War Department from Mayor General Charles P. Summerall, commanding the Hawiian Department, said that the new venture revealed possibilities of great national value.

The Bangor, Me. Rotary Club has elected Franklin E. Bragg president. Mr. Bragg is head of Orono Pulp and Paper Company. He has long been a prominent Rotarian and is a generally popular citizen of Bangor, active in all affairs pertaining to the public good. He has served as president of the Bangor Chamber of Commerce.

The Western Waxed Paper Company, which is affiliated with the Central Waxed Paper Company of Chicago, has completed plans for the erection of a large factory in Oakland, Cal. The new plant will be of reinforced concrete, one story in height, and will have floor area of 30,000 sq. feet. It will cost about $60,000. The company manufactures printed and plain waxed paper products. The Warren Manufacturing Company has issued an attractive illustrated booklet to commemorate its fiftieth anniversary. It is entitled "Fifty Years of Paper Making," and to the uninitiated it probably has all the charm of an undiscovered territory.

PAPER EXPORTS TO AUSTRALIA

Washington, May 11. —Canada tied with Sweden for second place in the list of countries selling paper to Australia in 1921, according to statistics recently issued by the Australian Government, and reported to the Department of Commerce by the U. S. Consul at Sydney. The Australian paper imports for the year ending June 30, 1921, according to this report, were: From Great Britain, $8,672,000; Canada and Sweden, approximately $5,400,000 each; from the United States, $3,760,000; from Norway, $3,260,000.

No peace is ever in store for any of us but that which we shall win by victory over the sin that oppresses, as well as over that which corrupts.—Ruskin.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 15. Speaking generally, the pulp and paper industry is in a satisfactory condition. Almost every section reports a good volume of business with prices on a firm basis. Trade in the Eastern part of Canada is apparently on a solid basis, and that after all is the important factor in relation to the pulp and paper business. From the local point of view, there is nothing to complain about, if we except the dull state of the printing industry.

Apparently there is no lack of faith in the future of the industry. In all parts of the country there are developments in the manufacture of pulp and paper. Those connected with newsprint being no doubt based on a belief that the present very active demand is no mere flash in the pan. The latest projects include a groundwood mill at Sillery, near Quebec, and a small tissue mill at St. Andrews, on the North River, P.Q. Then we have the additional capital requirements of the Canada Paperboard Company, Limited. Besides these other important developments in newsprint and pulp are under consideration; one of them involving the outlay of several million dollars. Appearances therefore point to an expansion of the industry. At the same time there are those who are of the opinion that we are in danger of going a little too fast, and that the menace of over-expansion is likely to prove harmful to the entire industry.

With regard to newsprint, any surplus stocks are immediately disposed of. For the moment there is a slight shortage, due to some conditions which are of a more or less unusual character. Two or three mills have not been able to produce at full capacity owing to this reason. The American publishers are understood to be using up reserve stocks to a certain extent; with circulations on the jump and advertising increasing, the publishers are not anxious to limit the size of the papers, and in the absence of getting their full demands from mills, some publishers have to fall back upon reserve stocks. The spot price is now a little stronger.

In most other lines there haye been only unimportant changes. Orders are coming into the mills at a fair rate, and quotations keep firm. Most plants are running at war capacity, and some are behind hand in their deliveries.

There is a good demand for groundwood, and it is hard to pick up any surplus tonnage. The price remains steady although it has gone back from the high point recently attained. Sulphite is a fairly good market, while bleached continues in satisfactory request at unchanged prices. It is certain that there will be a substantial shortage in the Swedish production of pulp, and although the price has dropped a little it is probable that the tendency will now be upwards.

The pulp and paper companies in the Province of Quebec are backward in their drive of logs owing to the late period of the break-up of the ice in the lakes. The price of pulpwood has strengthened, sales having been made at $22 per cord of peeled wood delivered at Watertown points.

Toronto Market News

While the distributing end of the paper trade in Ontario continues somewhat dull as far as volume of turnover goes, the feeling is one of optimism in respect to the probability of an early return to normal selling. One of the factors that will make for this is the ending of the uncertainty as to possible tariff changes at Ottawa and now that the budget has been brought down business interests generally know where they stand. It is believed that the paper trade generally will be favorably affected by this ending of uncertainty as to what was likely to be done in the way of tariff readjustments and that from now on business in paper lines will settle into a steady stride. One leading Toronto paper wholesaler interviewed last week said that while there was a disposition on the part of many jobbers to complain of lack of business, he ventured to say that most of the paper wholesalers were doing a larger business than they were a year ago, and some of them just as big a business as before the war. It might be, however, that the net receipts were not as large and they might not reach such a large aggregate, owing to lower prices, but on the whole he believed a satisfactory volume of what might be termed small business was being done and the wholesale paper dealer, when he came to view the situation closely, had little to complain about. The trouble was, he said, that paper men got into the habit of doing big business in a big way during the fat years and many of them had not adjusted themselves to smaller business and smaller profits, with lower expenses, which now prevailed. A number of Toronto houses report business as showing some signs of improvement and predict that by the middle of the month there will be a demand for lines of paper that have not been in large call during the past few weeks. This applies chiefly to such lines as wrapping paper, paper bags, and light weight papers.

PULP. — There is comparatively little activity in pulp circles and manufacturers report very little kick to the market. Very few of the paper mills are stocking. Groundwood pulp is quoted at from $35.00 to $40.00; bleached sulphite at $85.00 to $95.00; unbleached at $56.00 to $65.00 and news grade at $56.00.

RAG AND PAPER STOCKS. — Ontario dealers in rag and paper stocks report a distinct improvement in demand for both lines with the opening of May, although there is some complaint concerning the inroads of American buyers close to the border who are grabbing up considerable stuff on the Canadian side and keeping their own prices low. This is taken to indicate that prices generally will strengthen very shortly. According to the testimony of the Toronto rag and paper stock men the paper mills and board mills are busy, judged by the quantities of stock they are buying and the amount of scrap and trimmings being collected. They also report considerable trimmings from the printing establishments indicating a fair amount of business doing in this quarter. Prices of rags and paper stocks remain unchanged.

WRAPPING AND BAGS. — Jobbers handling wrapping papers and bags report a distinctly better tone to business since the opening of May and there is considerably more buying, although still in small quantities. The wrapping paper trade has been extremely dull for the past couple of months, but there are signs that it is about to come back again and both mills and jobbers are optimistic concerning the outlook, for good spring business.

NEW YORK MARKETS

New York, May 12. — (Special Correspondence). — Firmness in prices is probably the outstanding feature in the paper market at present. On every hand are indications of a strong situation in prices of paper of practically all kinds. It is quite apparent that demand in some cases has slowed down. Consumers seem to be resting on their oars, so to speak, with regard to additional purchases at the moment, presumably having covered their requirements for a while and not being anxious about increasing their commitments, yet in spite of the quieter market condition prices hold exceedingly firm, and, if anything, the tendency of quotations on most kinds of paper is in an upward direction.

The fact that buyers have let up somewhat in their operations does not by any means mean that the market is dull. Instead, paper is moving into consuming channels in a steady manner and in large amounts. Paper mills are well booked with orders and are running with few exceptions at close to capacity and shipping out their product about as quickly as it leaves the machines and is made ready for shipment. Moreover, reports say that a majority of paper manufacturers have enough commitments on file to keep them busy for some weeks to come. The mere fact that mills are so well supplied with orders is probably the reason demand has slackened, since consumers doubtless have anticipated their wants in such a way as to enable them to diminish their buying for a time.

The market for newsprint rules very firm. Print paper is moving in record tonnage and is being consumed about as rapidly as it reaches publishers. Notwithstanding the approach of the summer, when consumption of newsprint usually decreases owing to a falling off in display advertising in the daily press, publishers are still printing big issues. Many of them are still announcing in nearly every issue that so and so many columns of advertising were crowded out because of lack of space, thereby intimating that publishers are limiting the size of their issues.

The trend of opinion in the trade is that an advance in newsprint prices will surely be put into effect for the third quarter of the year. Intimations have been made by manufacturers that such will be the case though no definite announcements have yet been made. Up to the present it has been believed that the rise would amount to $5 a ton; now it is felt by many that the advance may be larger talk having been heard of the probability of a $10 per ton increase being made

Fine papers are in an active market position. Demand for bonds and ledgers is seemingly as brisk at present as at any time thus far this year, and mills are reported operating at close to full production. Prices of fine papers are strong. Advances in raw material,

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Finnish Cellulose Association
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AND

Finnish Wood Pulp Union
Helsingfors, Finland

higher wages and other factors all make for a firm fundamental condition, and manufacturers in frequent cases are marking up prices on certain lines of paper to bring them in better proportion with the prevailing cost of production. Indications are that fine papers and newsprint are enjoying the strongest market conditions of any other descriptions of paper.

Book papers are also firm in price and are moving in steady volume of no mean dimensions. Publishers are absorbing all the supply they have on contract and are frequently coming into the market to augment stocks. Consumption appears to be constantly on the rise, and most mills are well enough "heeled" with orders to keep them active for sometime.

Box boards are in rather limited demand. Certainly manufacturers could readily accomodate more business than they are getting, this being partly due to demand for board having slackened and partly to the fact that boards must move in close to record amounts to give mills sufficient to do to keep them all busy. In other words, it is no secret that board mill capacity is a little greater than the market can stand unless demand is of a scope experienced only in the paper box industry's active seasons of the year.

Plain chip board is quoted at $55 to $60 a ton, with news board quoted at similar prices. Market conditions are in favor of buyers securing some board at even lower prices than these. Mills want orders, and it is understood that certain of them are reducing prices off and on while seeking tonnage orders.

Coarse papers also are relatively quiet. Demand for wrapping has subsided to some extent, and tissue is not wanted in as large quantities as recently. No changes of note have occurred in prices, however. Manufacturers are maintaining quotations, and seem to be getting the prices named on such supplies as buyers desire.

GROUND WOOD. —Current demand for ground wood is spotty in character and rather limited in compass. Consumers are coming into sight as buyers only at intervals or as their needs develop, and it is noticeable also that the great bulk of buying is by those paper and board mills who have no facilities for grinding their own pulp. In other words, mills up through New York State are mostly enabled to produce all the ground wood that they themselves require, since water conditions have improved perceptibly, and not only are they out of the market as buyers but some of them are sellers of pulp.

Prices of ground wood hold fairly steady. Between $47 and $50 a ton delivered consuming plants is the range of prevailing prices, with f. o. b. grinding mill quotations running from $33 a ton all the way up to $40, depending on the freight from producing to consuming centres.

CHEMICAL PULP. —What seems to constitute a "buyers' strike" is said to exist in the chemical wood pulp trade. Demand from paper manufacturers is at best light; most consumers are coming into view as buyers only in a spasmodic way and even then are limiting their orders to rather small tonnage of pulp. The reason for the slow demand appears to be that paper and board mills have substantial supplies of sulphite and kraft on order, both for first open water shipment from Sweden and for delivery from domestic and Canadian producers, and there is a tendency to hold off in additional purchasing until some of the supply of pulp they have contracted for is at hand and until needs are more pressing.

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

In spite of the quietness, the price tone of chemical pulp is firm. No one is exerting pressure on buyers, fortunately for sellers they are in almost as strong a technical position as are buyers as few of them have large amounts of pulp to dispose of. Offerings from Scandinavia are far from up to usual tonnage, and indications are it will be sometime before normal supplies of sulphite and kraft will be available in Sweden for open market trading. Prime unbleached sulphite of foreign origin has sold in New York at 3.40 and 3.50 cents a pound ex dock, and Swedish kraft has brought up to 3.45 cents. These pulps are held with especial firmness owing to low spot stocks and the situation at primary sources. Unbleached sulphite of news grade is bringing around 3.25 cents, while bleached sulphite of foreign make is quoted at 4.50 to 4.75 cents a pound and No. 1 domestic at 5 cents.

RAGS. —The market for papermaking rags lacks important activity. This does not mean that there is no demand for rags, on the contrary mills are buying in a fairly large way, but business is minus that snap that is a feature in busier periods. Dealers in New York are maintaining quotations on nearly all kinds of rags. Roofing stock has eased off slightly further this week but little or no change is noted in other grades, and present prospects are that it is quite likely rag values will be pretty well sustained throughout the summer.

Roofing stock has sold at 1.35 cents a pound f. o. b. New York for No. 1 packing, and 1.20 to 1.25 cents New York for No. 2 stock. Certain felt-paper mills have bought in a moderate way at these prices while others have evinced virtually no interest. New cuttings have quieted considerably but no alteration in quotations is recorded. Old whites are steady, as are thirds and blues, dealers locally asking an average of 2.65 cents for repacked blues and 2.25 cents for miscellaneous packing.

PAPER STOCK. —Prices of waste paper appear to have steadied. No declines of importance have occurred this week, and in several cases those grades which up to a few days ago had shown a consistent downward movement have improved their prices position to some extent. Demand from mills has been fair; at least better than during the period of price reaction up to a few days ago. Folded newspapers have sold at 1.15 cents a pound f. o. b. New York, and No. 1 mixed paper at 90 cents a hundred pounds, prices on both these grades representing advances of $2 to $3 a ton from the bottom levels recently prevailing. Shavings also display a stiffening price tone. Demand for soft white shavings has been fairly active and dealers report sales of No. 1 packing at 3.50 cents per pound New York, while hard white shavings of No. 1 quality are quoted at an average of 4.25 cents at shipping points. Flat stock is dull and weak. Offerings by dealers of heavy No. 1 books and magazines at 2.05 and 2.10 cents a pound are seldom taken up by consumers, who seem to be neglecting book stock while presumably using wood pulp. Old kraft paper is firm at 2.10 cents a pound New York.

OLD ROPE AND BAGGING. Old manila rope continues firm in price and is moving to paper mills in a steady manner. Dealers report sales of domestic manila rope in No. 1 condition at 7 cents per pound and slightly higher at shipping points, and foreign rope is worth very nearly as much. Old strings are freely wanted and are rising in value. Mixed strings are quoted at around $1 a hundred pounds New York, and sisal strings at 150 cents. Old bagging is dull. Occasional sales to roofing mills at about 1.05 cents a pound New York are reported, while No. 1 scrap bagging is quoted to tissue paper mills at 1.25 cents per pound.

An entirely new departure in the manufacture of blotting paper is forecasted by the Forest Products Laboratories of Canada, as a result of an investigation recently carried out in their experimental paper mill. The best grades of blotting paper have hitherto been made from rag pulp, but the Laboratories have succeeded in producing a paper with excellent absorptive properties entirely from wood-pulp

CHANGES OF ADDRESS

The Harland Engineering Co. (Canada) Ltd. are now provided with more adequate telephone service as well as more commodious quarters at 291 Mountain St. (between St. Catherine and Sherbrooke) Montreal. The new numbers are Uptown 8076 and 8077.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Upset price — Red and White Pine	— $6.00 pr M ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests

Toronto, April 16th, 1923

N. B. — No unauthorized publication of this notice will be paid for

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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:-: EDITORIAL :-:

IN DAYS OF OLD

It is a long, long time since Volta, Faraday, Gibbs, Maxwell, Helmholtz and many others were trying to find the fundamental laws underlying and governing the nature and behavior of electricity. Even before the invention of the paper machine by Robert, and its development by the Fourdriniers, the earlier of these investigators were concentrating their master minds in earnest endeavor and with determined effort to discover the mysteries of one of the greatest forces now harnessed for the manufacture of pulp and paper.

Michael Pupin, whose researches form in large part the basis for successful long-distance telephone communication, to mention only one field of his work, has written for "*Scribner's Magazine*" a most interesting account of his search in England, Germany and France for fundamental knowledge in the science of Physics and particularly in the field of Electricity. In those days the wisest scientists in the world knew less about electricity than does the 14 year old boy today with his own radio set. But the tireless, consecrated work of those men searching, as Pupin believed himself to be, for the meaning of the laws of God in Nature has made possible the wonderful developments that we enjoy today. The editor of this magazine happens, at the same time, to be in charge of the editorial work on the set of textbooks on the Manufacture of Pulp and Paper, which is being prepared under the auspices of the Industry, and just now his attention is focused on the description of the sectional Electric Drive for Paper Machines, and in the study of the delicate, yet positive, automatic, and instantaneous regulation of the paper machine drives, the thought persisted that the paper industry would not be enjoying these refined developments of mechanical perfection without the untiring efforts and the often obscure labors of such men as those we have mentioned. It is true that in time their message and their discoveries came to the attention of some of their fellow scientists, but even then the significance of their work was but partially appreciated; but they continued to experiment and to think. In those days there were but few books, and but few scientific magazines for the dissemination of new found knowledge; the discovery of important facts by one worker might be entirely unknown to a fellow worker in the same field only a few hundred miles away. At that time there were not the opportunities for the scientific conventions and the discussion of new discoveries such as we have now with resulting inspiration and guidance to many workers in the same field. Nor did the investigators have the facilities for laboratory work that men of our day enjoy, but they persisted just the same, and the result of their work formed the basis of our modern progress. It required the accumulation of the knowledge or decades of research before advance became particularly rapid but we are now going ahead so fast by virtue of the development of the mechanical sciences that a speaker at the banquet of the Technical Association in New York was moved to express a fear that our personal characters were not growing fast enough to keep pace.

It is a cheering and encouraging matter however, to feel that the self sacrificing devotion to scientific research and investigation was not confined to the intellectual giants of past generations, but that we have men today who are taking up the burden where others laid it down, and are selecting appropriate parts from the contributions of many of their predecessors, are putting them together and working out new scientific structures with new and greater degree of service to their fellow men. It is not only that researchers of our day are giving constant and conscientious service, but in a large number of cases their individuality is entirely unknown to those who benefit most from their work. The spirit of co-operation pervades the organizations where these men are devoting their labors, and the result is the wireless telephone, or an improved type of paper machine drive.

Similar research work is being done in other fields and the Pulp and Paper Industry is reaping the benefit indirectly. It is time, however, that the Pulp and Paper Industry, for itself, were undertaking a good deal more in the way of research on the very important and pressing problems relating to this industry.

BRITISH EMPIRE EXHIBITION

Plans for Canada's participation in the British Empire Exhibition to be held in Wembley Park, near London, England, from April 20 to October 31 next year, are practically completed, says the *Commercial Intelligence Journal.*

Canada expects to have an exhibition worthy of its name. The Canadian Government exhibit will be under the direction of the Minister of Trade and Commerce, who for this purpose will have under his jurisdiction the staff of the Dominion Government Exhibition Commissioner.

The Department of Trade and Commerce therefore desires, as a preliminary announcement, to state that within the grounds of Wembley Park, where the great exhibition is to be held, will be constructed the Canadian Building. The Empire Exhibition Executive will also construct a special building to be used as a restaurant, in which products of the Empire only will be used, provided they can compete successfully in quality and price with similar foreign commodities.

It is anticipated that the exhibition will be visited by millions of people and a unique opportunity will thus be afforded for manufacturers and producers of foodstuffs throughout the Empire to advertise their products to the world.

Arrangements have not yet advanced sufficiently to permit of any detailed announcement, but it is desirable that it should be known among Canadian exporters of foodstuffs that the Department of Trade and Commerce is prepared in every possible way to assist Canadian suppliers of foodstuffs throughout the period of the exhibition. For this purpose it is suggested that firms interested, and who are not now represented in London or elsewhere in the United Kingdom, should arrange to appoint agents in London, to whom all information can be provided so that on short notice during the period of the Exhibition prices and supplies can be made available.

The Department of Trade and Commerce will provide a special officer detailed in London who will act as liaison officer between Canadian suppliers of foodstuffs and the authorities in charge of the restaurant.

Canadian firms, therefore, interested in supplying Canadian goods to the exhibition authorities, should communicate with The Deputy Minister, Department of Trade and Commerce, Ottawa, giving the names and addresses of their agents or jobbers in the United Kingdom and full information regarding the foodstuffs they can supply, so that arrangements may be made well in advance. The department will also welcome helpful suggestions.

Other features of the Exhibition will be dealt with from time to time in these columns.

HOW THE SALES TAX APPLIES TO PAPER

The new Sales Tax as announced by The Minister of Finance in his recent budget is causing a lot of discussion amongst the members of the Canadian Paper Trade Association in Toronto and elsewhere. In an interview with the Pulp and Paper Magazine of Canada, a leading Toronto paper dealer had this to say on the subject of the Sales Tax in its relation to the merchant handling printing papers:

"The outstanding object of the new six per cent Sales tax is to prevent the pyramiding complained of in the former Sales Tax, the workings of which we have heard discussed. The jobber of printing papers, without complaint, submitted to being discriminated against in the operation of his business by the mills being able to sell a licensed manufacturer at two and one quarter per cent less tax overhead than its jobber was able to do, and now we are being cheerfully informed from all sides that as the new tax is to be collected at the source, from the manufacturer, the jobber of printing paper will, of course, have to pay this tax on his purchases. There seems to be doubt in other quarters, but this is the readily expressed opinion as to the Government intention—but why?

"Printing paper, as carried in stock by merchants is in every sense in the meaning of the Act an unfinished product, being conveniently colated for passing along to the printers, who, in respect to the Act, are manufacturers when doing a business of over $10,000 a year. And our merchandize can be considered subject to the collection of six per cent tax only when sold to unlicensed printers, or to a private plant for their consumption after such processing as they may add; in other words when sold to other than a licensed manufacturer.

"The Act provides that tax on materials used in the manufacture of goods will not be paid until the completion of the manufacture, to ensure that only the tax will be paid on one particular class of goods.

"Where is the source of production of, say, your letter heads, office forms or your catalogues? The manufacturer of course, who is the printer, makes such finished products from the raw material, which we, the printing paper merchants, distribute to them.

"The printing paper merchant could not exist if called on to pay the six per cent tax on purchases, as the big percentage of his business is done with printers who, under this Act are rated as manufacturers, and could, beyond a doubt, buy from the manufacturer without a tax when such paper is to be further processed.

"The distribution of printing paper is somewhat different from that of distributing wrapping paper or other lines which are used by the ultimate consumer in the same state of processing as when they leave the mill. Nothing carried in a warehouse by any member of our branch of the Association should be subject to tax, except when sold from warehouse to other than a licensed manufacturer printer, when a six per cent tax would be collected for transmission to the Government. If printing paper passes through the jobber, who, virtually is the mill salesman, it should have no pyramiding of the tax, that is, printing paper should go from the mill to a licensed wholesaler free from tax; from a licensed wholesaler to a licensed printer free from tax, and the licensed printer should collect and pay the Government six per cent on the completed work, including paper as sold to him. But should the jobber sell to an unlicensed printer, or other, he then should collect and be responsible for six per cent on such sales.

"If a mill sells direct to the consumer (who would buy as a separate item the added work of the printing) six per cent would be charged, or if sold to a licensed printer, no tax would be collected as the printer, being a manufacturer, when licensed, would be responsible for the tax, after adding his process to make the paper into form as used by the consumer.

"The printing paper merchant may be offered a rebate of the tax when goods are sold to those holding manufacturer's license, but this would be undesirable as it would mean the paying of the six per cent on purchases and waiting indefinitely for the rebates.

"This new sales tax is evidently intended to be fair to all, but it is up to merchants of printing paper to make their case clear so that no misunderstanding will come up later."

The work of the world is done mostly by ordinary ability, while geniuses are waiting for splendid opportunities.

Quality and Properties of the Chief Grades of Paper

By E. ARNOULD

(Translated from *Le Papier* xxv, 385-389, Sept. 1922, by A. Papineau-Couture.

Copper Engraving

This requires an all rag pulp (cotton), which must be snow-white. No color, size, nor filler is added. Weight per square meter 300 to 500 grams. The sheets must be of even and uniform thickness. The formation must be even and full. The stock should not be beaten too short; it must not be hydrated, but rather free. Drying should not be carried out at too high a temperature. The sheets must be cut absolutely square. The grain should be even and free from deformation. Yellowing of the paper during drying should be avoided, as also heating of the stock during beating and contamination by small particles of iron. In order to ensure maximum durability, all traces of chlorine and of free acid must be removed.

Unsized Lithographic Papers for De Luxe Editions

Requires an all rag pulp (cotton) which should be snow-white. The paper is unsized and uncolored, and should have no very marked grain. Weight per square meter 120-400 grams. The formation should be even and full. Other requirements as above.

Sized Lithographic Papers for Fine Printing

All rag, linen and cotton. Well-sized for printing; colored with fast colors. There should be no grain. Slight machine finish. Very full formation. Filler retained in the paper 8 to 10 per cent. Very even and regular thickness of the sheets, which should be cut absolutely square. Weight per square meter 90-350 grams. Other requirements as above.

Paper for Mounting Engravings

A mixture of pulps is used, which must be very white. It is never sized. The filler retained in the paper should be between 14 and 16 per cent. Very little color is added. The grain must be quite pronounced on one side of the sheet. Weight per square meter 500 to 600 grams. The paper should have a fair amount of rattle and should lie quite flat. The stock is beaten to medium length and should be kept free. The paper should not be wound on too small a core, which might cause it to break longitudinally. The paper should be as though blown; i.e., very compressible.

Halftone Engraving

The paper is prepared from rags and chemical pulps, which must be absolutely white. It must be well sized, have a good and full formation, and be fairly opaque. A small amount of fast color can be used, and it should retain from 16 to 18 per cent of filler. It is given a slight machine finish, and is super-calendered. Weight per square meter 70 to 110 grams.

Paper for Dictionaries, Memo-Pads, Diaries

Composed of rags, chemical wood pulp, and esparto. Well sized. Either blueish or dull white. Even formation; very opaque; ordinary calendering; fair strength; filler 12 to 20 per cent. weight per square meter 40 to 80 g.

Featherweight Printing Paper

Composed of chemical pulps, rags, and esparto; half-sized; dull white or blueish; fairly good formation, very slight machine finish; little or no fillers; very bulky; weight per square meter 75 to 120 grams. Should not fuzz on the printing presses. The cheaper kinds contain 20 to 50 per cent. of groundwood and 8 to 12 per cent. of filler.

Featherweight Writing Paper

Much the same as the previous, but requires more care in manufacture. It should have more bulk, the stock should be beaten quite free, and it should have little or no finish.

Ordinary Printing Paper

Composed of chemical and mechanical pulps; half-sized; blueish white or otherwise suitably tinted; ordinary formation; medium opacity; 16 to 22 per cent. of filler; should preferably be flexible and lie flat; and should be given a fairly good machine finish.

Paper for Chromo-Lithography

Composed of chemical pulp, cotton, and esparto; white, blueish, or tinted; should be very supple, and at the same time have a certain amount of inertia; fair degree of sizing; very even formation; 18 to 22 per cent. of filler; free from fuzz; super-calendered; the paper should be fairly opaque and very clean; weight per square meter 120 to 400 grams. The stock should be beaten rather short.

One- Ply Bristol

Composed of mixed stocks, including bleached straw; white or tinted; hard sized; very little filler if any; very even formation; stiff, plenty of rattle, and considerable transparency; does not stand folding; beaten short and wet; machine finished; should lie absolutely flat.

Bristol Board

Same as above, but obtained by pasting together two or more sheets; formation quite full; very transparent; heavily calendered; does not fold or break as readily as one-ply bristol.

Maps

Very white paper, composed of various stocks, slightly blueish; little or no filler; well sized; formation slightly irregular; beaten to medium length of fiber; weight per square meter 70 to 180 grams; high folding strength in both machine and cross directions; medium calendering; sheets should lie quite flat; the paper should be soft but stand a fair amount of handling.

Paper for Phototype Work

Mixture of strong rags and strong chemical wood pulp; very white or slightly blueish; extra hard sized; beaten of medium length and hydrated; very even thickness; even formation; paper should have a good rattle and be hard and strong; it is either calendered or made with a pronounced grain; it should be relatively soft to take impressions properly; mineral fillers 8 to 10 per cent.; weight per square meter 100 to 300 grams; the grain of the wire should appear as little as possible.

Drawing Paper

Composed of hard chemical wood pulp and strong rag stock; no fillers; extra hard sized; considerable resistance to erasure, beaten very long and very wet; surface with a very pronounced grain; very seldom calendered, sheets should lie quite flat; formation regular, weight per square meter 150 to 220 grams.

Bond

Composed of very strong rag stock or chemical wood pulp; blueish white; extra hard sized; slight calendering, leaving the grain still apparent; should be hard and strong (in both machine and cross directions) and have a good resistance to both folding and erasure; formation regular; preferably opaque. The stock should be beaten long and wet, weight per square meter 80 to 200 grams; breaking length 3,000 to 5,000 meters (average); filler 8 to 12 per cent.

Writing

The composition will vary according to the price, and may include chemical wood pulp, esparto, aspen, and even groundwood; blueish white; filler 12 to 18 per cent; very full and even formation; should be opaque, stand a reasonable amount of handling, and have a slight amount of rattle; calendering medium; considerable bulk; beaten slightly wet; hard sized; stock should be quite pure and free from lumps, etc.; weight per square meter 48 to 90 grams.

Parchmentized Paper

Composition variable, but should always be prepared from strong pulps; blueish or dull white, such colors as are used being fast; slight engine sizing, followed by tub sizing; very opaque; beaten very long and very wet; free from lumps, etc.; machine finished, or lightly calendered; weight per square meter 55 to 75 grams; average breaking length 4,000 to 6,000 meters. In a well prepared paper tub sizing increases the average breaking length by about 1,400 to 1,500 meters. Avoid the formation of wrinkles during drying. The elongation and shrinkage during drying must be taken into consideration. Avoid making the paper glassy, and do not refuse the broke.

Imitation Japan Paper

Composed of hard rags, hard chemical wood pulp, and esparto. Dull white; uneven formation; beaten long and very wet; ordinary sizing; little or no filler, not over 5 to 6 per cent; lightly calendered; very flexible and strong; breaking length 4,000 to 6,000 meters; has a very characteristic appearance; weight per square meter 100 to 200 grams; is sometimes required with deckle edge; high folding resistance.

Coating Stock

Composed of strong but flexible stock; well sized; blueish or dull white; fairly full formation; beaten rather long, without hydration; free from lumps or hard particles (sand, grit, etc.); little or no finish; 12 to 18 per cent of filler; very bulky; weight per square meter 60 to 120 grams; the sheets should have inertia to prevent curling after coating.

Book Covers

Composed of chemical wood pulp and rags, or chemical wood pulp and groundwood; as white as possible, with slight blueish tinge; 20 to 30 per cent. of filler; high opacity; strength of no account; beaten short and free; absolutely free from lumps; weight per square meter 50 to 70 grams.

Typewriter Paper

May be composed of rags and chemical wood pulps in various proportions; slightly parchmentized; either blueish white or colored; thoroughly engine sized; slight machine finish; beaten to medium length with a fair amount of hydration; must lie perfectly flat and be free from wrinkles; high bursting strength; weight per square meter 33 to 60 grams; opaque; when calendered, avoid making the paper glassy.

Sized Onion Skin

Made from very strong wood pulps, to which is added 15 to 25 per cent. of esparto pulp or else hard rag stock; sized with 4 per cent of rosin; no fillers; made in various colors, principally white or bright colors; frequently calendered; should lie flat and be free from wrinkles and holes; weight per square meter 18 to 32 grams.

Unsized Onion Skin

Nearly always made entirely from hard rag stock, to which is sometimes added a small proportion of soda pulp; neither size nor fillers; weight per square meter 18 to 32 grams; seldom calendered; made in all colors; formation should be very even and regular; sheets should lie quite flat and be free from wrinkles and holes. It is sometimes used for letter books, in stereotype works, for protecting blanks, and in the manufacture of celluloid.

Granite or Mottled Papers

Composed of rag stock and good grades of chemical wood pulp; medium sized; contains 10 to 15 per cent. of filler; calendering medium; the bulk of the stock is of a different color from the fibers which give the mottled effect; but the color of the latter should not blend, nor should it affect in any way the color of the remainder of the paper.

Bicolored Papers

These can be made by various processes:

(1) By a combination of a fourdrinier machine and a cylinder machine, the two sheets being brought together at the couch roll.

(2) By feeding, by means of a special device, fresh stock on the sheet formed on the wire of an ordinary fourdrinier.

(3) By joining together two sheets made on two fourdriniers running in opposite directions, which come together under common couch rolls.

(4) By delivering on to the upper couch roll a very fine highly colored stock, containing a high proportion of filler or of ochre.

In certain mills, it is made on a three cylinder machine, each cylinder receiving a different colored stock, in very much the same way as cardboard is made.

The trouble with all these processes is to prepare the different sheets so that all will have the same hardness, strength, sizing, hydration, etc., so that they will all be equally affected by changes in atmospheric conditions. Otherwise the sheets will roll owing to differences in elongation and shrinkage.

Fast colors are generally used, except in certain special cases (e.g., for permits, etc.) where aniline dyes are used purposely so that they may be readily identified. The colors most largely used are: yellow and white, olive and white, chamois and white, blue and white, red and white, green and white, and bister and white.

Blotting Papers

These are made in various qualities, the best being of boiled and bleached cotton rags. The most important property is absorbency. This quality is determined conventionally by dipping the end of strips of the paper in a bath of distilled water at room temperature, and observing the height to which the water rises in a given time (usually 10 minutes). A blotting paper is not considered to be of good quality unless the height of absorption is at least 100 mm., and for the best qualities it should be at least 150 mm. in ten minutes.

* * *

But the properties of a paper, as enumerated above, should not be confused with the method of manufacturing the paper. We have outlined their physical characteristics; but in order to reproduce them satisfactorily and consistently one requires to have a thorough practical knowledge of paper making or else very minutely detailed instructions. A paper mill superintendent who is thoroughly familiar with paper pulps can, either with or without the help of microscopical analysis, ascertain quite accurately the nature of the stock used in the manufacture of a given grade of paper.

He must then determine the proportion of strong stock, which forms the framework, so to speak, of the sheet and gives it strength. In the case of all rag papers, it constitutes about 50 per cent. of the fiber furnish and may consist of linen, flax tow, thread waste, cordage, and sometimes new cotton trimmings. The remainder consists of second grade stocks which act as fillers and are chosen to impart either transparency or opacity, little or much bulk, more or less whiteness, hardness or softness, or inertia suppleness, as the case may be. They are made up of softer linen or cotton rags, or of waste paper or broke of the same nature as the paper being made. Generally speaking, in all rag papers these two grades of stock are present in equal proportions.

With papers composed of both rags and chemical pulps, two cases must be considered:

(1) To a large proportion of rags is added a small amount of chemical pulp;

(2) A small amount of rag stock is added to a large amount of chemical pulp.

More frequently one has to deal with a mixture of various chemical pulps, in which case the strong stock constitutes from 40 to 70 per cent. of the fibers, while the filling stock constitutes from 60 to 30 per cent; the former are bleached or unbleached sulphite and soda, and the latter are poplar (both sulphite and soda), birch, bamboo, reed, esparto, bleached straw, and trimmings and broke of paper of the same grade and quality as is being made. The latter group can again be divided into two distinct classes: those which are hard, transparent, and have rattle, and those which are soft, flexible and opaque. It is therefore necessary to make a judicious choice according to the properties required and also according to their cost.

It can be laid down as a general principle that the price paid for any given grade of paper should be sufficiently high to allow the paper maker to use the stock or stocks best suited to give the required properties when judiciously blended. It may sometimes happen that the manufacturer makes an error in calculating his cost of production; and in such a case, if he is unwilling to stand a loss, he must necessarily use an entirely different stock from what he should logically have used. The quality of the paper cannot but be adversely affected, and is frequently the cause of much trouble and annoyance.

In order to avoid these unfortunate happenings, it is necessary to be able to analyze paper, so as to determine the properties and proportions of the raw materials of which it is composed. The cost of production can then be determined with a reasonable degree of accuracy.

In the case of mineral fillers, as with the fibrous materials, the paper maker has a certain number of raw materials from which to choose; and he must know their properties, nature, specific gravity, yield, cost (in the finished paper), and also how to work them so that they will impart the desired properties to the finished paper.

Various factors in connection with sizing also affect the paper. The quality of the size milk should not be the same with all kinds and grades of paper, nor the amount of size in the milk. Various difficulties are encountered, due to the composition of the water, or of the stock, or to the method of sizing, and these must be overcome. In this connection it may not be amiss to recall that it has been proved by numerous experiments that the method of sizing affects the results as much as the quality of the size. It can safely be stated that using a rosin size containing 30 per cent of free rosin, in the form of milk with 28 to 30 grams of rosin per liter, and following proper technique, a paper should be evenly sized with 3 per cent of rosin and 4 to 6 per cent. of sulphate of alumina.

But neither the art of determining the composition of paper, nor of sizing it properly can be acquired overnight; and it requires several years of practical experience to obtain consistently good results. And even with this experience errors are quite liable to occur. These can be mended by means of tricks of the trade.

When starting up an order on the paper machine it may be noticed that something is wrong, that there has been a bungle somewhere, and something must be done immediately to prevent the loss of the material which is in process of manufacture. This may not always be an easy matter. In some cases, when the difference between the results obtained and what is required is too great, it may be best to use what is in process of manufacture for some other order.

Let us suppose that the sheet is too soft and lacks strength, that the color of the stock is not sufficiently white to obtain the color required, that too much filler was used, or that the stock is too hard and transparent.

The first thing to do is to determine what furnish should have been used. Then, after estimating approximately how much stock is left in the machine chest, calculate the furnish of the next beater so that when it is sent to the machine chest the mixture will have the required composition. In case the color is not satisfactory, the correction must take into account not only the amount but also the nature of the coloring to be added.

The superintendent should always try to reproduce as faithfully as possible the quality and grade of the sample submitted; and as his staff is frequently more or less inexperienced he must be able not only to detect errors but also to correct them. A careful study of the paper to be reproduced is therefore of the utmost importance. After ascertaining the nature and amount of filler retained, the whiteness of the stock, the degree of finish and calendering, the degree of sizing, the opacity, bulk, formation, coloring, grain, absorbency, stiffness, rattle, folding and tearing resistances, in a word, all its physical properties, the qualitative and quantitative fibrous composition is determined microscopically. He then calculates the cost of production, after which he is in a position to judge if he can make the paper at a profit at the stipulated price or if he must substitute cheaper materials which will give the same or nearly the same results.

There is one rule which should always be followed when starting up on a new order; try to have the color of the stock a little whiter than is required, add rather less filler in the first beaterfuls, and color the stock a shade lighter, so that if a correction is required it may be through the addition of color, filler, etc. If, on the contrary, too much of these have been added, it is always more difficult to effect the required correction.

INSTITUTE ITEMS

OUR JAPANESE STUDENTS

The far reaching appreciation of the value of the correspondence courses in Pulp and Paper Making conducted by the Institute of Industrial and Domestic Arts is indicated by the fact that more than 280 students have enrolled. Many nationalities are included.

Among the students enrolled by Mr. Edmond Piché in British Columbia is Mr. Naoyuki Oseki who holds an important position with the Pacific Mills, Limited at Ocean Falls. Besides Mr. Oseki, the Institute has two other Japanese students, who have the honor of being the first to enroll outside of Canada and the United States. Both of these gentlemen are employed by the Oji Paper Manufacturing Co., the largest concern of the kind in Asia. Mr. Bunjo Shimura is Assistant Chemist and Mr. Takeo Ota is Mill Engineer; they are university graduates.

Considerable interest is also being shown in England, and in the United States there are already 25 students of the Institute courses.

TROUBLE WITH WIRE SEAM

Editor,
Questions & Answers,
PULP & PAPER MAGAZINE.

Dear Sir:

I am writing you to ask for any information you may be able to give with regard to the trouble I am having on account of the wire filling up just back of the seam. This causes a line of crushed paper just back of the seam, and is worst on thin papers. I have tried running the wire with varying degrees of suction, but this does not seem to have the desired effect in correcting the trouble.

Hoping that I may get some suggestions through your Question and Answer column, I remain

Your truly,

A. Backtender.

Note.—The Editor will be glad to receive and pay for answers to questions.

The happiness of your life depends upon the quality of your thoughts.—Marcus Aurelius.

THE END OF THE DRIFTER

By J. J. Harpell.

President, of the Institute of Industrial and Domestic Arts

The strongest tendency that the average worker has to fight against is the disposition or belief that there is some other job at which he could make more money or find greater pleasure in doing than the one he has; and this tends to make him dissatisfied with his job. He concludes that he should not study it, because he intends to leave it as soon as he can get what he thinks is a better one. He leaves it or (what is more likely) he loses it. At close range, the new work does not possess the attractions it seemed to have at a distance, and in a short time he has the same disregard for his new job that he had for the old one. And so he goes on from one job to another. "Too many people are like the man who travelled the world over seeking a four-leafed clover, only to find it, too late, in his own garden. They see opportunity everywhere but where they are; and lo! there and there only it is to be found by them."*

Years go by, and in a short time he finds himself in the class of unskilled floaters, uninterested in his work, unhappy in his home, and always a lap or more beyond his income. As in the case of his work, his home life lacks order and foresight. As age creeps up, his physical powers wane, and his earning power, unsupported by a trained mind, declines. Hampered by poverty and debt, he and his family are forced to live in squalid surroundings with poor furniture, mean clothes, and no pleasures worthy of the name. He and his family live in constant dread of anything that will stop the meagre income, even for a day. There is no chance now to lay by for old age or sickness.

Is there anything more to be dreaded than the consequences of an ill-regulated or non-regulated life? Yet how many young men and women ever stop to give this matter a thought! Without purpose or determination to accomplish something definite, they drift along. By a few hours of indifferent work each day, they earn their daily bread; and the remainder of their waking hours is spent in idleness or in the pursuit of pleasure.

There is just as much pleasure, and a great deal more happiness, to be had from a life of earnest work and study as from a life of idleness and indifference. To make the change requires only a resolution and a concentrated effort for a few months, until the habit is formed. Moreover, the start may be made at any time, and while at any kind of work. If one wishes to become a well-balanced thinker, the brain must be trained, just as the muscles must be trained if one desires to excel in athletics. Brain power or brain "muscle" is made by study.

*T. J. Foster in his advice on how to succeed.

THE PROGRESS OF INDUSTRIAL RESEARCH IN CANADA

What Canada has accomplished in the way of scientific and industrial research is thoroughly covered in a 168-page book, just issued by the Canadian Manufacturers Association. The book contains the addresses delivered at the National Research Conference held under the auspices of the Association at Ottawa on February 20-22 and includes statements by the representatives of government departments, universities, colleges, industries and others engaged in research work. As a record and summary of the progress of scientific and industrial research in Canada, the publication will be found of considerable value.

A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

Continued from last issue

The General Electric sectionalized drive is operated in the following manner. In the basement below each paper machine there is installed a 500-kw. direct-current-geared turbine-generator shaft. The line voltage determines the rate of production on the paper machines and is 185 volts for 800 ft. per minute, with a workable range from 500 ft. to 1,200 ft. per minute. This voltage is controlled from the machine room by a chain-operated rheostat in the 500-kw. generator field. The turbine speed and the exciter voltage are held constant.

The motors driving the various sections have their fields energized by the 125-volt exciter. They are large, low-speed units designed for about 150 r.p.m. at 245 volts so as to avoid the interposition of gears. The couch roll and calender stack each take a 100-hp. motor, while the presses each take a 50-hp. motor, the dryer two 100-hp. motors and the reel a 30-hp. and the rewinder a 35-hp. motor, all of the shunt-wound interpole type.

With the exception of the rewinder motor and the second motor on the dryer, each motor is accompanied by a 20-hp. synchronous motor — or generator, as the case for the moment may be — and these synchronous tie-in units are all connected to a common three-wire, three-phase bus to which nothing else is connected. Their fields are energized from the 125-volt exciter. These synchronous units are belted through cone pulleys to the direct-current motors, with the exception of the first dryer motor. In that case the cone pulleys are dispensed with as the speed of this unit is taken as par and the "stretch and draw" of the other sections are regulated to this base speed.

The effect of these synchronous units tied in as they are is similar to that of a great flywheel which can be neither delayed nor hurried. With all the motors running, any direct-current motor and the section it drives may be adjusted as to speed by moving the belt along on the cone pulleys. If the direct-current motor field strength is right, the synchronous unit will be simply idling, as indicated by its ammeter. Should the direct-current motor be inclined to run faster, the synchronous unit becomes a generator giving energy to the other similar units which for the time may be performing as motors. This puts a restraining load on the direct-current motor and effectually holds it in line. Conversely, if a direct-current motor is inclined to slow down, its attached synchronous unit would supply aid as a motor again, effectually holding the section in line.

These guide units can aid or hold back up to 40 hp. each, and by occasional hand adjustment of the direct-current motor-field rheostats these exchanges of loads can be kept near to zero. Little attention is paid to the loads on these units, however, and the meters bear only a center mark and outside limit marks. Any change in the load on one unit affects the other eight by only one-eighth of the change. The belt shifter is brought through to the front of the machine, and the machine tender can change the speed of a section by a fraction of 1 per cent with the assurance that it will hold that place until he makes a further change.

When it is necessary to slow down or stop an individual section, the ordinary drum controller is resorted to, and its first step disconnects the synchronous unit from the common bus. Thereafter the section is controlled in the ordinary manner. After the section is brought up to normal speed the synchronous unit is tied in by pushing a button at the controller. Should the motor-overload circuit breaker open, it also disconnects the guide unit.

After a complete shutdown, as, for instance, to put in a new Fourdrinier wire, all the sections can be restarted, brought up to speed and tied in as fast as the controllers can be handled. The tying in by the synchronous units does not require any special manipulation, as, being belted to their respective sections,

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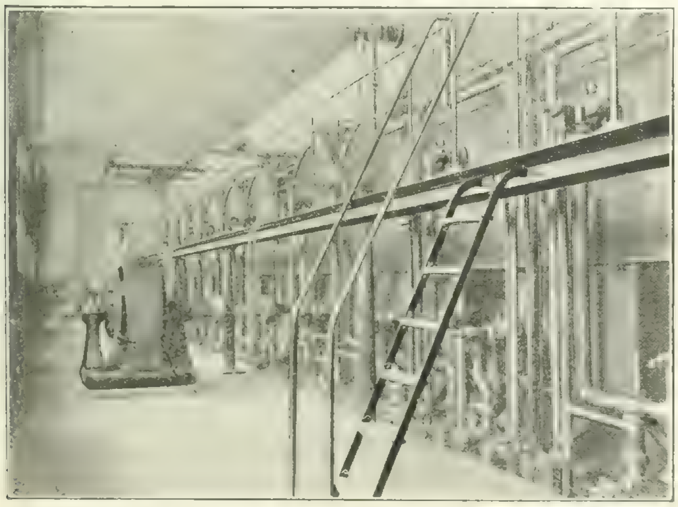
*Chief engineer, International Paper Company.

†Power and Mining Department, General Electric Company.



Dryer Section of Paper Machine Showing 100-H.P. D. C. Driving Motor

Twenty Sand Filter Beds Have a Capacity of 20,000,000 Gal. Per Day they are always so closely in accord that there need be no delay on their account.

As previously mentioned, the wrapper machine takes the rejected material from the ground-wood screen room and sulphite screen room and converts it into heavy wrapping paper, making about 10 tons in eight hours. The stock passes through beaters and Jordans and then to the wrapper-machine room. The wrapper machine is of the cylinder type and is driven by two motors, one on the constant-speed line shaft carrying auxiliaries and one on the variable-speed shaft driving the paper machine itself. These are both direct-current motors operated by a turbo-generator set which carries 30 lb. back pressure in order that the steam may have sufficient heat to dry this very thick paper.

The shop machinery is driven both in groups through line shafting and with individual motors connected to

TABLE VI—ELECTRIC MOTOR DRIVES IN SULPHITE SCREEN ROOM

(Total connected load, 1,440 h.p.; 550 volts alternating current.)

One 10-in., 1,800-g.p.m., 135-ft.-head, white water to pits:	
One 100-h.p., 1,800-r.p.m., squirrel-cage.	G. E. *
One agitaor blow-pit soft-stock tank:	
One 25-h.p., 690-r.p.m., squirrel-cage.	C. W. †
One knotter screen:	
One 5-h.p., 860-r.p.m., squirrel-cage.	C. W.
Three first screens and one second screen (rotaries):	
One 150-h.p., 790-r.p.m., squirrel-cage.	G. E.
One 5-in. 500-g.p.m., 160-ft.-head pump, white water shower to screens:	
One 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 10-in., 2,500-g.p.m., 45-ft.-head pump, white water to screens:	
One 42-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
One 10-in., 3,865-g.p.m., 20-ft.-head pump, stock screens to washers:	
One 40-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 3-in., 300-g.p.m., 200-ft.-head, pump, showers to washers:	
One 24-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Four sulphite stock washers, four dums each:	
One 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two agitator, screen-room soft-stock chests:	
Two 25-h.p., 690-r.p.m., squirrel-cage.	C. W.
One 1,360-g.p.m., 25-ft.-head pump, white water to "save-alls":	
One 15-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
One 600-g.p.m., 28-ft.-head pump, "save-all" stock to tank:	
One 10-h.p., 900-r.p.m., squirrel-cage.	G. E.
One agitator, sulphite soft-stock tank:	
One 10-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 620-g.p.m., 41-ft.-head pump, sulphite stock to mixer:	
One 20-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Two stock consistency regulators:	
Two 0.1-h.p., 1,750-r.p.m., squirrel-cage.	R. & M. ‡
Color pumps:	
One 5-h.p., 690-r.p.m., squirrel-cage.	C. W.
Mixer for G. W. stock, sulphite stock, alum and color:	
One 0.5-h.p., 1,750-r.p.m., squirrel-cage.	R. & M.
Beater for sulphite laps:	
One 50-h.p., 690-r.p.m., wound rotor.	C. W.
Wet machine No. 1:	
One 50-h.p., 690-r.p.m., wound rotor.	C. W.
Wet machine No. 2:	
One 50-h.p., 860-r.p.m., wound rotor.	C. W.
One 2½-in., 250-g.p.m., 50-ft.-head pump, showers to wet machines:	
One 7.5-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Four Jordans:	
Four 150-h.p., 327-r.p.m., squirrel-cage.	G. E.
Screen room fan:	
One 5-h.p., 1,730-r.p.m., squirrel-cage.	C. W.

*General Electric. †Canadian Westinghouse. ‡Robbins & Myers.

TABLE VII—ELECTRIC MOTOR DRIVES IN GROUND WOOD MILL

(Total connected load, 15,100 h.p.; 2,300 volts alternating current.)

One conveyor cross-connecting long conveyors over charging floor:	
One 10-h.p., 690-r.p.m., squirrel-cage.	C. W. *
Two conveyors, 220 ft. long over charging floor:	
Two 25-h.p., 900-r.p.m., squirrel-cage.	G. E. †
Cut-off saw charging floor:	
One 5-h.p., 1,800-r.p.m., squirrel-cage.	Cr. Wh. ‡
Ventilating fan charging floor:	
One 7.5-h.p., 720-r.p.m., squirrel-cage.	C. W.
Air compressor:	
One 2-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two heater fans, grinding room, 15,000 cu.ft. per minute:	
Two 5-h.p., 1,800-r.p.m., squirrel-cage.	C. W.
Heater-fan grinder building:	
One 15-h.p., 900-r.p.m., squirrel-cage.	G. E.
Heater-fan screen room:	
15-h.p., 690-r.p.m., squirrel-cage.	C. W.
Ventilating fan, grinder floor:	
One 5-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two motor-generator exciter sets for grinder motors:	
Two 350-h.p., 1,200-r.p.m., 2,200-volt.	G. E.
Two 225-kw., 1,200-r.p.m., 125-volt direct-current generators.	G. E.
Two oil pumps for grinder load regulators:	
Two 2.5-h.p., 1,200-r.p.m., 110-volt, direct-current.	G. E.
Grindstone trimmer:	
One 10-h.p., 900-r.p.m., wound rotor.	G. E.
Two 3-in., 266-g.p.m., 404-ft.-head, four-tage pumps, high pressure:	
Two 50-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 480-g.p.m., 201-ft.-head pumps, low-pressure grinder, jack water:	
Two 50-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Six two-stone magazine grinders:	
2,652-kva., 240-r.p.m., 2,200-volt synchronous.	G. E.

(Total connected load, 14,150 h.p.; 500 volts alternating current.)

Two sliver screens:	
One 15-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 6,300-g.p.m., 41-ft.-head pump, white water to grindstone:	
One 100-h.p., 1,620-r.p.m., squirrel-cage.	G. E.
One 252-g.p.m., 97-ft.-head pump, "save-all," white water to grinder showers:	
One 100-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Four rotary knotters:	
One 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two 14-in., 5,000-g.p.m., 57-ft.-head pumps, stock to knotters:	
Two 100-h.p., 900-r.p.m., squirrel-cage.	G. E.
One 3-in., two-stage, 300-g.p.m., 200-ft.-head pump, filtered water shower and first screen:	
One 25-h.p., 1,180-r.p.m., squirrel-cage.	G. E.
Two second screens:	
One 50-h.p., 750-r.p.m., wound rotor	G. E.
Thirty deckers in groups of five:	
Six 25-h.p., 600-r.p.m., wound rotor.	G. E.
One 2,400-g.p.m., 83-ft.-head pump decker, white water to tank:	
One 75-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Two white-water pumps to "save-alls":	
Two 7.5-h.p., 570-r.p.m., squirrel-cage.	C. W.
One 6-in., 98-ft.-head pump, "save-all," stock to decker stock tank:	
One 30-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 1,700-r.p.m., 60-ft.-head pump, "save-all," white water to screen showers:	
One 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 10-in., 25-ft.-head pump, rejections from fine screens:	
One 30-h.p., 900-r.p.m., squirrel-cage.	G. E.
One pump rejections from second screens to wrapping machine system:	
One 100-h.p., 720-r.p.m., squirrel-cage.	G. E.
One vertical 80-g.p.m., 25-ft.-head pump, sump pit to sewer:	
One 5-h.p., 1,300-r.p.m., squirrel-cage.	C. F. ‖
One 1,350-g.p.m., 96-ft.-head pump, stock to mixing system:	
One 50-h.p., 1,200-r.p.m., squirrel-cage.	G. E.

*Canadian Westinghouse. †General Electric. ‡Crocker-Wheeler. ‖Canadian Fairbanks.

machines. There are blacksmith, machine, pipe, carpenter and pattern shops and a roll-grinding room fully equipped to handle all routine work of mill maintenance.

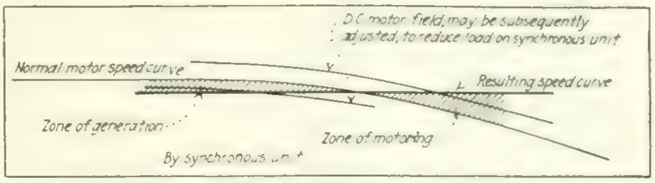
The lighting of this mill is particularly well distributed and was laid out with a view to economy without sacrificing light where light is needed. There are about 1,200 tungsten lamps averaging 100 watts and actually running from 75 watts to 200 watts. They are fed by open conduits, using condulets for outlets, and are all equipped where practicable with 18-in. white enameled reflectors. The lighting load is about 120 kw.

In this mill, the only one 100 per cent electrified mill in the paper industry, may be found practical applications of electric power in many forms. The pumping of water and stock forms a large percentage of the load, and the combined output of the pumps is about 140,000 gal. per minute. A reference to the diagram showing the water content in the materials as they pass through the various operations will indicate how important these units are. The grinding of wood on such a wholesale plan by electric motors, while not new, is so well worked out here that it is worthy of

TABLE VIII—ELECTRIC MOTOR DRIVES FOR ONE OF FOUR 164-IN. PAPER MACHINES

(Total connected load, 488 h.p.; 550 volts, alternating current.)

One 2,900-g.p.m., 56-ft.-head pump, stock from chest to mixing box, common to 4 machines:	
One 60-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.*
One 2,000-g.p.m., 28-ft.-head pump, suction white water to mixing box:	
One 25-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One 4,800-g.p.m., 40-ft.-head pump, stock to machine screens:	
One 75-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Four rotary machine screens:	
Four 5-h.p., 600-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One 1,000-g.p.m., 70-ft.-head pump, fresh water to showers:	
One 30-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One Fourdrinier shaker (not used):	
One 1-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two Nash vacuum pumps, Fourdrinier suction boxes and couch suction box:	
Two 100-h.p., 720-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One turbine-generator set for driving nine sections of paper machine:	
One 500-kw., 900-r.p.m., 330-volt, D.C., generator	G. E.
One 35-kw., 900-r.p.m., 125-volt, D.C., exciter	G. E.
One Fourdrinier section drive at couch roll:	
One 150-h.p., 136-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One Nash vacuum pump, first press suction roll:	
One 100-h.p., 750-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One first press drive:	
One 100-h.p., 143-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
Three second, third and fourth press drives:	
Three 50-h.p., 151.3-r.p.m., 245-volt, D.C.	G. E.
Three 20-h.p., 857-r.p.m., 210-volt, synchronous units.	G. E.
(Total connected load, 630 h.p.; 245 volts, direct current.)	
One dryer (two-motor drive):	
Two 100-h.p., 150.1-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One dryer (starting and slow running) "kicker":	
One 30-h.p., 1,800-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One calender drive:	
One 100-h.p., 147.7-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One fan for broke from calender to broke heater:	
One 15-h.p., 1,150-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
One calender-roll hoist gear:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One reel drive:	
One 30-h.p., 98-5-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One reel hoist:	
One 3-h.p., 1,200-r.p.m., 550-volt, A.C.	N. W.‡
One slitter drive:	
One 3-h.p., 1,200/900-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One fan to blow trimmings from slitter to broke beater:	
One 3-h.p., 1,750-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One motor-generator set for rewinder drive:	
One 50-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One 32-kw., 1,200-r.p.m., 250-volt, D.C.	G. E.
One rewinder drive:	
One 35-h.p., 330-r.p.m., 245-volt, D.C.	G. E.
One hoist for rewinder:	
One 3-h.p., 1,200-r.p.m., 550-volt, D.C.	N. W.



Range of Motor Performance in the Sectionalized Paper Machine Drive

TABLE IX—ELECTRIC MOTOR DRIVES COMMON TO THE FOUR PAPER MACHINES

(Total connected load, 633 h.p., 550 volts, alternating current.)

Two broke beaters:	
Two 50-h.p., 720-r.p.m., 550-volt, A.C., wound motor.	G. E.*
Two agitators in broke-stock chests:	
Two 5-h.p., 690-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
Two 6-in., 800-g.p.m., 57-ft.-head pumps, broke stock to machine chests:	
Two 25-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two air compressors:	
Two 100-h.p., 690-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
Four machine-room heater fans:	
Four 25-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Four machine-room heater fans:	
Four 15-h.p., 1,200-r.p.m., 550-volt., A.C., squirrel-cage.	G. E.
Four finishing-room heater fans:	
Four 3-h.p., 1,120-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One pump, hot-water return from heating system:	
One 15-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two wet broke-truck battery chargers:	
Two 3.5-h.p., 1,150-r.p.m., 550-volt, A.C.	E. P.‡
One finishing-room rewinder:	
One 25-h.p., 860-r.p.m., 550-volt, A.C., wound rotor.	C. W.
Two elevators between finishing and shipping departments:	
Two 27-h.p., 600-r.p.m.	O. F.|

*General Electric. †Canadian Westinghouse ‡Electric Products. |Otis Fensom.

TABLE X—ELECTRIC MOTOR DRIVES IN WRAPPER-MACHINE DEPARTMENT

(Total connected load, 335 h.p.; 550 volts, alternating current.)
(Total connected load, 105 h.p., 240-volts, direct current.)

Two 6-in., 700-r.p.m., 25-ft.-head pumps, wrapper-stock beater:	
Two 10-h.p., 900-r.p.m., squirrel-cage.	G. E.*
One stock beater:	
One 50-h.p., 750-.p.m., wound rotor.	G. E.
Two Claflin refiners:	
Two 75-h.p., 430-r.p.m., squirrel-cage.	C. W.†
One Jordan:	
One 100-h.p., 400-r.p.m., squirrel-cage.	G. E.
Agitator in stock chest:	
One 15-h.p., 690-r.p.m., squirrel-cage.	C. W.
One turbine-generator set:	
100-kw., 1,200-r.p.m., 240-volt, D.C.	G. E.
Constant-speed line-shaft drive:	
One 30-h.p., 775-r.p.m., 230-volt, D.C.	G. E.
Variable-speed line-shaft drive:	
36/75-h.p., 400/1,000-r.p.m., 240-volt, D.C.	G. E.
Vacuum pump:	
7.5-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Exhaust fan:	
One 15-h.p., 690-r.p.m., squirrel-cage.	C. W.

*General Electric. †Canadian Westinghouse.

TABLE XI ELECTRIC MOTOR DRIVES IN SHOPS

(Total connected load, 174 h.p., 550-volts alternating current.)

One line shaft and blacksmith blowers	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.*
One line shaft, machine shop:	
One 15-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One pipe threader:	
One 5-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One ventilating-fan machine shop:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One welding set:	
One 7.5-h.p., 1,800-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One planer:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One shaper:	
One 5-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One keyseater:	
One 5-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One drill press:	
One 5-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One roll grinder:	
One 10-h.p., 900-r.p.m.. 550-volt, A.C., squirel-cage.	G. E.
Two 5-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One pipe cutter:	
One 10-h.p., 860-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two line shafts, pattern shop and carpenter shop:	
Two 30-h.p., 860-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
Two heater fans, pipe and machine shops:	
Two 5-h.p., 1,720-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One elevator, machine shop:	
One 25-h.p., 900-r.p.m., 550-volt, A.C.	A. B. S.‡
One concrete mixer:	
One 15-h.p., 1,140-r.p.m., 550-volt, A.C.	Wag.‖
One air compressor, portable:	
One 1-h.p., 725-r.p.m., 550-volts, A.C.	Wag.

*General Electric. †Canadian Westinghouse. ‡A. B. See. ‖Wagner.

considerable study. Only in very recent years has it been considered feasible to grind wood other than by direct application of water power. The hundreds of wide scattered auxiliary units of every conceivable type could certainly not be located so conveniently or operated so economically with any other from of power transmission than electric motor drive. Finally, the sectional motor drive of the paper machines themselves is a very fine development of special industrial engineering and works out very much to the satisfaction of the trade.

PAPER MAKING IN JAPAN

The Japanese Legation in Tokio reports that the market in Japan has been extremely active. Much foreign paper is to be imported under contract. For the Japanese mills 1921 was a far better year than 1920. The big firms, however, complain that foreign competition is severe, partly because of the high costs of production, partly because of the low rate of exchange in some European countries. Prices of the best quality of print paper rose to 29½ sen per pound in January 1921, falling to 23 sen in April-June, 22 in June, 20 in September, and 21 in November. The stock of paper on hand in November amounted to 160,000 bales against 200,000 at the end of 1920. Japan's consumption of paper reached 129 million pounds in 1905, 251 million in 1912, and 560 million in 1921; in 1920 the yearly average was about 12 pounds a head, which is little compared with American's 120 pounds and England's 60 pounds. In the future Japan's consumption of paper will rise. —Papir-Journalen May 13, 1922.

The man God uses does not spend much time in looking for an easy place.

To bring up a child in the way he should go, travel that way yourself.

WILL CANADA REMAIN LAST IN THE RACE?

Col. F. M. Gaudet, formerly Technical Executive Officer of the Advisory Research Council, and himself well experienced in practical benefits of industrial research, concludes his remarks thus: "What are we doing in Canada today? What are we doing to help our industries and manufacturers? We are doing nothing........ Some of our rich corporations are doing little, but what we want is the establishment of a research institute that will be a guide in all these matters. We want to focus our efforts and our energies in such a way that we shall get the best results."

Mr. Hume Cronyn, formerly chairman of the parliamentary committee on research, outlined the past and present effort in respect of research by the leading industrial nations of the world. Britain has made wonderful strides since she awoke to the peril of her position in 1915. The United States is far in the lead. Canada is woefully behind. Mr. Cronyn concludes by saying: "Are these other nations, who are making large expenditures on scientific research, chasing a will-o'-the-wisp? Can this idea be a mere fad or dream? As Dr. Ruttan has pointed out, we are the only British Dominion that has not actively taken steps towards the establishment of a national research institute. Are all the others out of step? Is Canada alone marching forward?"

"The British Research Council with the great fund its disposal (£2,000,000) has approached the various industries of Great Britain and has induced some twenty-three of them to organize themselves, and they have established a separate laboratory for the study and solution of their respective industrial problems and for the improvement and cheapening of their manufacturing processes. Each industry has subscribed a large sum of money and the Research Council has added to this an equal sum, and the special research laboratory for each industry has thus been started.

"In Canada conditions are quite different. The industries are fewer and not so wealthy and the Canadian Government is not in a position to subscribe $10,000,000 in aid of research.

ABITIBI CELEBRATED RECORD

Eleven hundred employees of the Abitibi Power and Paper Company, Limited, were entertained at a banquet at Iroquois Falls on May 5, officials of the company being the hosts. The banquet was in celebration of the record production of over five hundred tons of newsprint in a single day, a feat which the company acknowledged could not have been accomplished without the loyal co-operation of the employees. The banquet was a distinct success and illustrated the good feeling existing between the company and, its workers.

EQUIPMENT FOR PAPER MILLS

There are thirteen new paper-making machines being installed in Canadian paper mills this year. When erected and running full they will consume more than 350,000 additional cords of wood a year. Canada is already consuming and exporting more than 5,000,000 cords of pulpwood, representing the growth of a century or more, from 1,250,000 acres of land.

THE WOODLANDS SECTION

PARLIAMENT KNOWS FOREST SITUATION

The last issue of the Pulp and Paper Magazine had just gone to press when the following communication was received from Mr. F. J. D. Barnjum.

"If the Government is sincere in its announced desire to investigate the question of stopping the exportation of unmanufactured wood from Canada, it can find plenty of convincing evidence to warrant such a policy at very little expenditure of time and money." This is the considered statement of Mr. Barnjum, whose efforts on behalf of forest conservation have had the effect of forcing the issue upon the Government's attention, but who is by no means satisfied with Hon. Mr. Fielding's statement in his budget speech that the Government will appoint a commission to look into the question and report to the next session of Parliament.

"The fact is," said Mr. Barnjum, "that the Government's action is not sincere and is not based upon a desire to arrive at an honest solution of the problem. On the contrary, it is simply a means of shelving the matter and of shirking a duty which the Government owes to the country without seeming to do so.

"The reason I say the action lacks sincerity is that I have had the personal assurance of most of the ministers of the Government, including that of the Prime Minister and of the Minister of Finance, that they have already looked into the matter and have become fully convinced of the seriousness of the forest depletion now going on in Canada and of the disaster it threatens to the physical and economic welfare of the country.

"A year ago I made an offer to the Minister of Finance to bear the entire expense of a committee of his own appointing to examine into the forest situation, and promised that if their findings were not more alarming than anything I had described I would cease to agitate for forest conservation. He declined my offer, because, he said, to accept would be to cast doubts on my statements, to which I replied that if he accepted my statements as true and yet failed to act upon them he was derelict in his duty to his country.

"Every member in the House of Commons is acquainted with the full story of our critical forest situation. The figures and facts furnished to them during the past year and a half have never been challenged.

"With regard to Mr. Fielding's concern for the interests of the owners of the fee-land, no one knows better than the Minister that this is mere subterfuge, and that the influx of new mills to this country, if exportation of raw wood was stopped, would at once create a home demand for every cord of wood that is now being sold by the farmer for export.

"If the ministers had the slightest doubt either as to the necessity or the propriety of stopping exportation of unmanufactured wood, such doubts could have been easily dissolved by a reference of the point at issue to their own experts or legal advisers, but I am convinced that no such doubts were or are seriously entertained by them. They realize, quite as well as anybody, the absolute necessity of taking all possible steps immediately to counteract these losses and to conserve the remaining forests for Canada's exclusive use, and for them to talk about dealing with the situation at this time through the agency of a 'royal commission' is about on a par with a fire department chief submitting to a committee of the town council the question of whether the firemen shall be allowed to respond to a general alarm while the whole town is ablaze and threatened with destruction.

"Every one in Canada knows just what to expect from an investigation by a royal commission. We have seen many of them before. First, it involves a needless waste of public funds; second, it opens the way to unnecessary, ineffective and discursive controversies, which result in nothing at all, and, third, its reports are without value and are destined for the waste basket even before they are made.

Provincial Precedents.

"It will be recalled that when the province of Quebec, under the leadership of Sir Lomer Gouin, decided that the time had arrived to stop the exportation of unmanufactured wood from the Crown lands in this province, there was no paltering with a commission or any such nonsense. An order-in-council was put through and the thing was done. That was the process followed, also, in Ontario. The Governments of both these provinces came to the conclusion that the public interest demanded that the foreign exploition of their natural resources should cease and they acted accordingly. The result has been, as everyone knows, of immeasurable benefit to the provinces themselves and to the Dominion at large.

"The present situation is that for many years past, 50 per cent. of the pulpwood cut in Canada has been exported to the United States, bringing in but an inconsiderable return to this country. Our forests are being rapidly exhausted. What with the losses sustained through fires, insects and other destructive agencies, we are within measureable distance of the commercial exhaustion of our supply. The devastation that is going on has a deleterious effect upon our climatic conditions and will eventually affect a large part of our developed and undeveloped hydropower.

"It is but a few days ago that one of Mr. Fielding's colleagues, the Minister of Justice, gave to the press of the country a statement in which he declared: 'Forest scarcity has bred high prices and keen demand, so that every square mile of timber in this Dominion may be said to represent potential employment, municipal development, traffic for our railways, home markets for our farmers, and other valuable commercial gains. It is useless to argue that forests are private property, for eighty-five per cent. of the forest area of Canada is owned by the people. Even were forests protection nothing more than insurance on the existence of paper and lumber companies and the newspaper industry, the claim on a Canadian citizen's co-operation would be hardly less sensible. The plain fact of the matter is that one of the steadiest pillars of the public revenue, railway traffic, well-paid employment, and the upkeep of hundreds of municipalities, is standing timber. That pillar may continue to make a great statistical showing right to the edge of national disaster, for the manufacture of forest products can proceed at high speed until the moment that the storehouse of raw materials reaches the brink of bankruptcy''.

''In the face of these conditions and having all the facts before them, the Dominion Government deliberately trifles with the situation and tries to humbug the people with the announcement that a commission will be appointed to 'investigate'. There can be only one conclusion, and that is that the Government is recreant to its trust and indifferent to the public welfare.

''To my mind, this is a bigger issue than any other now before the country, and it will become still greater as the days go by. There is still time for the Government, at this session of Parliament, to disregard its feeble attempt to deal with the situation and put on the statute books a law that will protect Canada's forests from the ruthless exploitation to which they are now being subjected and to conserve one of our greatest national assets for the country's own benefit. If it fails to do so, I, for one, shall conclude that it and the party behind it are no longer worthy of support, and I fully believe that the great mass of the voters of Canada will take the same view. I have no hesitation in predicting that the flagrant disregard of Canada's interests, as displayed in their dealings with this question, if persisted in, will bring about the ignominious defeat of Mr. King's Government and of the Liberal party at no very distant day.''

FOREST FIRES DEPLORED BY THE FARMERS

Several important resolutions, including one deploring the great waste by forest fires, were passed by the Fort William District Municipal League in annual session in the City Hall Auditorium.

Respecting forest fire losses R. Falshaw, of Kaministiquia, opened a discussion which ensued for over an hour, practically every delegate attending having something to say in the matter, all remarks bearing the tone that something must be done to prevent serious fires. A resolution embodying such suggestions as a system of public investigation to determine the cause of forest fires and to fix responsibility; that an enquiry be made in all four districts in this part of Ontario as to the expediency of lengthening the open season against setting out brush and clearing fires to May 15 and that fire ranging service be put in operation early enough to exercise control over the putting out of grass fires which are capable of causing serious damage and that men for this service be selected who will not be partial to individuals or corporations, was passed.

DISASTER AWAITS IF FORESTS GO SIR LOMER SAYS

(Specially written by Hon. Sir Lomer Gouin for the Canadian Forestry Association)

One of the greatest menaces facing Canada today is the progressive destruction of the forest resources. The most expert information shows that ten trees have been wasted by human-set fires to one tree utilized for the service of the Canadian people. This spoliation of what is, in the main, a public-owned property, of great immediate utility and quite indispensable to the future of our country, cannot be permitted to proceed much longer. If we are willing to recognize the damaging consequences of forest waste, surely we are willing, as co-partners in Canada's progress, to put a stop right now to a form of public robbery that must be checked if the nation is to survive.

The forest is the most destructible of all our natural resources. Had it not been for recurrent conflagrations started by human carelessness Canada today would undoubtedly have been the richest forest owner on the globe. Forest scarcity has bred high prices and keen demand, so that every square mile of timber in this Dominion may be said to represent potential employment, municipal development, traffic for our railways, home markets for our farmers, and other valuable commercial gains. It is useless to argue that forests are private property, for eighty five per cent of the forest area of Canada is owned by the people. Even were forest protection nothing more than insurance on the existence of paper and lumber companies and the newspaper industry, the claim on a Canadian citizen's co-operation would be hardly less sensible.

The plain fact of the matter is that one of the steadiest pillars of public revenue, railway traffic, well-paid employment, and the upkeep of hundreds of municipalities is standing timber. That pillar may continue to make a great statistical showing right to the edge of national disaster for the manufacture of forest products can proceed at high speed until the moment that the storehouse of raw materials reaches the brink of bankruptcy. If we are to avoid such disaster we must join hands as citizens today and stop the plague of camper's fires, smoker's fires, prospector's fires, and the multitude of other vicious agencies that we Canadians with our own hands are setting loose each summer to ruin a great public heritage.

APPROVED OF PERMIT SYSTEM

Fredericton, N. B. May 10. As a result of the wet weather of the past week following the backward spring conditions, the Department of Lands and Mines decided to extend the time limit for slash burning from May 10th., to May 15th.

This action by the Department is similar to the extension which was granted last year and was done to permit those who have not yet succeeded in disposing of their slash a further opportunity to do so before slash burning, except in exceptional circumstances, is forbidden. Operators and loggers will also benefit from this extension in clearing up brush from the past season's operations occurring within three hundred feet of railway lines and in the vicinity of mills and camps.

The new regulation which provides for registration certificates is receiving the endorsation and hearty support of all directly connected with the forest industries. Many letters of approval have been received by the department since the first announcement of the operation of this scheme was made.

"I received a book of certificates and wish to congratulate the Department in such commendable advanced legislation", wrote a citizen who has had some twenty years of fire fighting experience. "The concise statement of regulations on the back of each certificate should do much to eliminate carelessness with camp fires, cigars and cigarettes."

From a County Councillor — "The matter of registration certificates, I believe, is a long step in the right direction, and one I was hardly expecting to see this year, as a great many people look on wilderness lands as their own. However, I am very glad to know that it is in force, and feel that ultimately it cannot help but be of great value in saving our forests."

A no-forest fire record for the month of April has already been established, but fishermen are already preparing for their initial fishing trips this season.

AVERAGE YIELDS FROM VARIOUS WOODS OF GROUNDWOOD PULP

Based on data collected at an ordinary commercial grinder by the Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin.

Species of wood	Weight of bone-dry wood per cu. ft., in pounds	Yield of bone-dry pulp per 100 cu. ft. of solid rossed wood, in pounds
Birch, white	34.20	2954
Fir, alpine	22.00	2068
Fir, balsam	21.50	1908
Fir, lowland white	21.53	1950
Fir, noble	21.07	1920
Fir, red	22.25	1915
Fir, silver	21.03	1872
Fir, white	21.40	2007
Gum, black	30.36	2612
Hemlock (eastern)	24.60	2030
Hemlock western	24.80	2160
Larch, western	27.76	2100
Pine, jack	24.00	2126
Pine, loblolly	28.21	2454
Pine, lodgepole (Cal.)	23.20	1926
Pine, lodgepole (Mont.)	25.15	2136
Pine, western yellow	24.65	2061
Pine, white	20.25	1885
Poplar	24.16	2168
Spruce, Englemann (Colo.)	21.28	1965
Spruce, Englemann (Mont.)	24.40	2250
Spruce, Sitka	23.60	2040
Spruce, white	26.42	2400
Tamarack	32.00	2620

The sooner you get a child to be a law unto himself, the sooner you will make a man of him.

Pure living, true thinking, right acting and accurate stating, are good foundations for a noble character.

FUEL VALUE OF WOOD WASTE OVER-ESTIMATED

Manufacturers of wooden products are apt to over estimate the fuel value of the lumber wasted in cutting-up operations. The argument is frequently advanced that a supply of waste on hand at all times permits large savings in coal, and that the purchase of ready-cut wood stock would not be economical because it would leave the manufacturer no waste to use as fuel for operating the power or heating plant.

The false logic of such an argument is apparent when consideration is given to the fact that the material which is thus being used for fuel is high-grade lumber which is worth pound for pound from three to ten times as much as coal. The heating value of this material is considerably lower than that of coal. It is estimated, and the figure is high enough to be conservative, that pound for pound the fuel value of the waste from lumber is not more than 62 per cent of that of coal.

A thousand board feet, or approximately 3,800 pounds, of waste from oak lumber will have a fuel value equivalent to that of 2,360 pounds of coal. If coal is worth $6.50 a ton, the fuel value of a thousand board feet of oak would be $7.66. But the oak lumber from which the waste cuttings came probably cost the manufacturer $62.50 per thousand board feet. The cost of the oak waste as fuel, then, is about eight times that of coal, and the handling charge in the furnace room is greater for wood waste than for coal.

The fuel value of waste is not usually great enough to offset the freight charges on it from mill to factory. It would seem a logical practice, then, on this ground alone, for a manufacturer to use dimension stock and try to reduce his cutting-up waste. The unavoidable waste which always occurs in the manufacture of wooden products usually can be utilized to best advantage as fuel.

ST. MAURICE PAPER'S STRONG POSITION

For the year ended on December 31, 1922, the financial report of the St. Maurice Paper Company, Limited, a subsidiary of the Union Bag and Paper Corporation, shows net profits of $445.075, which is equivalent to 5.63 per cent on the outstanding capital stock of the company. This compares with a net profit of $706,729 in the previous year, when however, there was written off inventories a sum of $703,240 in a readjustment to approximate market value.

Operating profits for the year under review are shown at $696,593, after provision for Government taxes, which compares with $1,046,679 in the previous year, and $2,440,250 in 1920, the company's record period. To the net profits of 1922 of $617,946 is added the previous balance of $617,946, making a surplus of $1,063,021. From this is deducted cash dividends paid during the year, amounting to $394,995, being at the rate of 1¼ per cent quarterly leaving a total surplus of $668,026.

The balance sheet section of the statement discloses the company's strong position well maintained, with. in fact, a slight improvement in working capital position showing.

It will do little good to go out as personal workers unless we go forth prepared by prayer.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties and Testing of Materials

A-1. Determination of cellulose in plant material, according to the method of cross and bevan. Rudolf Sieber. **Zellstoff U. Papier 3**, 27-29 (Feb. 1923). In the procedure for the determination of cellulose according to Cross and Bevan there is uncertainty in recognizing the end-point of the reaction, consequently the cellulose may be attacked. A method is described whereby the reaction is interrupted, yielding an unattacked cellulose. The chlorination apparatus consists of a wide glass ring over the bottom of which is drawn and tied a linen cloth filter. It is of such a size to fit a 6 cm. buchner funnel. A rubber ring is inserted between the funnel and the bottom edge of the glass container to secure good suction. The wood meal, 3 to 4 g., is placed in the above glass apparatus and heated in a beaker containing water to thoroughly moisten the sample; after cooling, the water is sucked off, and a saturated solution of chlorine water added. With the disappearance of the chlorine odor, in 5 to 10 min., the liquid is sucked off to remove the hydro-chloric acid formed and washed once. The treatment is repeated until the residue is nearly free from lignin, as determined by previous test. After washing, the residue is accorded the usual treatment with sodium sulphite solution, first for 30 min., then for 20 min., washed, transferred to a gooch crucible, dried and weighed. In an actual test the total chlorination time was 30 min. and 200 cc. chlorine water were used. The corrected copper number of the isolated cellulose was never above 1.5 and there was no evidence of oxycellulose. This residue can be further investigated, by known methods, for its content in other substances, lignin and pentosans.—J. L. P.

A-1; A-3. Paper Making Materials from India and Nigeria. Bull. Imp. Inst. 20, No. 3, 287-292 (1922). **Talipot palm leaf stalks** from India yield a pulp from which it is possible to prepare a paper of fairly white appearance and good strength. The pulp bleaches with difficulty and requires a relatively large quantity of bleach. It is doubtful whether the manufacture of white paper from the stalks would be remunerative. Trials with **Betel nut husks** from India indicates that they are not a very suitable material for paper making and that they could only be employed in conjunction with longer-fibred materials for the production of low grade brown papers and boards. Their utilization in this manner does not appear promising. Nigerian **elephant grass** is a satisfactory material for paper making, but it would not be remunerative to export it to the United Kingdom. It could, however, be utilized in Nigeria for the production of half-stuff for export.—A. P.-C.

A-3. Production of Paper Stock from the Papyrus Plant. H. Steinhiller. Ger. patent 365,571. **Papierfabr. 21,** 13 (Jan. 7, 1923). The process consists in treating the papyrus plant, prepared by boiling or retting, to a mechanical squeezing action, as by beating or rolling, and a simultaneous washing with water to free it from pith. The remaining fiber bundles are disintegrated in a mechanical way.—J. L. P.

A-3. Digestion of Typha Domingensis. Emil Heuser and Jan Haugerod. **Papierfabr.** 20, 253-262 (March 5, 1922). Translation by C. J. West in **Paper Tr. Jr.** 75, No. 1, 32, 34, 36 (July 6, 1922). See **P. P. M. C.** 20, 500 (June 15, 1922). (**P. T. J.** 74, No. 25, June 22, 1922) —A. P.-C.

Wood as a Raw Material for the Manufacture of Paper Eng. Hoyer. **Papierfabr.** 21, 17-21 (Jan. 14, 1923). General information, especially regarding economy and paper-making qualities, are given for the following woods; spruce **(Picea excelsa)**, Scotch fir **(Pinus sylvestris**, fir **(Abies pektinata)**, larch **(Larix europaea)**, aspen **(Poplus tremula)**, birch **(Betula alba)**, beech **(Fagus silvatica)**, linden, oak, and alder. Weights per cubic meter of certain woods and their ash contents are tabulated. Wood grown in northern countries or at high altitudes are preferable for paper making on account of their superior quality fibers. The average length of summer wood fibers is given as 3, 5-4, 5 mm., width of fiber 0.03-0.06 mm., fiber wall thickness 0.002-0.003 mm.; the corresponding values for spring wood fibers are 2.5-3.5 mm., 0.015-0.03 mm.; the corresponding values for spring wood fibers are 2.5-3.5 mm. 0.015-0.03 mm., and 0.005-0.008 mm.—J. L. P.

A-4. The relative strength of sheet-machine and hand-mold sheets. E. Sutermeister. **Paper ind.** 4, 1661-1662 (March 1923). A comparison of results obtained in testing the strength of bleached and unbleached soda and sulphite, both beaten and unbeaten, when the sheets are prepared in a hand mold and when they are prepared by means of Wilen's sheet machine, from which the author draws the following conclusions: the sheet machine will give sheets of practically constant weight regardless of the time of beating, within reasonable limits; there is no possibility of calculating from the tests on hand mold sheets what those on machine made sheets would be. It is believed that much more reliable results can be obtained with a sheet machine, and it is recommended that wherever possible the use of the hand mold for quantitative work be abandoned.—A. P.-C.

A-14, K-18. Device for Determining the Thickness of Cardboard Automatically. Ignaz Daubner. Ger. patent 362,493. **Wochl. Papierfabr.** 54, 249 (Jan. 27, 1923).—J. L. P.

A-14. Work of the German Bureau for Testing Materials: Paper Testing. W. Herzberg. **Zellstoff U. Papier** 3, 17-20 (Jan. 1923). Several important investigations are reported briefly: disintegration of typed documents in East Africa, identification of wood using sections of the same, proving falsified documents, spontaneous ignition of pulp, age of paper board, printing paper, paper from Adansonia bast fibers, moisture absorption of tissue paper during transport from Germany to South America, testing paper for fastness to light, detection of harmful metallic constituents in paper. — J. L. P.

G.—Treatment of Pulp

C-0. Removal of Resin, Fat, Wax, Etc., from Plant Materials, Especially Wood and Wood Pulps. C. G. Schwalbe. Ger. patent 366,205. **Papierfabr.** 21, 28-29

(Jan. 14, 1923). The process consists in subjecting not only the extraction liquid but also the materials to be extracted to a continuous or intermittent motion, accomplished by rollers or similar devices which also expose fresh surfaces of the material to the solvent. J. L. P.

D.—Mechanical Pulp Manufacture

D-4. Magazine Grinder. J. J. Warren. Can. patent 225,541, Oct. 31, 1922. The lower end of the magazine is slightly smaller than the upper. The feed chains are provided with spurs to grip the logs and drive them down positively, and means are provided for adjusting the lateral pressure of the chains against the mass of logs. The lower end of the magazine is provided with an adjustable pocket which can be lowered to compensate for the inevitable wear of the stone. The water required for grinding is supplied at the top of the magazine which causes it to be preheated before reaching the hot stone, softens the wood, and prevents the loss of the sensible heat of the vapor rising from the stone. Means are provided for cooling the shaft between the stone and bearings to prevent the latter from becoming overheated and melting.—A. P.-C.

D-4. Controlling the Pressure in Grinder Pockets. W. Thaler. Can. patent 225,447, Oct. 31, 1922. Same as Fr. patent 532,702. See J. M. Voith, **P.P.M.C.** 20, 634, July 27, 1922.—A. P.-C.

D-4. Method of and Apparatus for Feeding Wood to Magazine Grinders. P. Priem. Can. patent 225,053, Oct. 24, 1922. In order to obtain an even pressure of the wood over the whole surface of the stone; i.e., as great in the center as at the sides where the wood is in direct contact with the feeding devices, the lateral pressure of the latter against the mass of wood is suitably increased. This may be obtained (1) By driving the feed chains at different speeds, the upper chains being driven at a faster speed than the lower ones; (2) By reducing the diameter of the hopper adjacent the stone in the area in which the feed devices work, by means of pressure plates working by compressed air or water or by means of springs; (3) By curving the lower portion of the hopper; (4) By equipping the feed chains with wedges which, during their working travel, gradually vary their inclination from a downwardly angled position to a more nearly horizontal one.—A. P.-C.

D-4. Grindstone Dresser. W. P. Aikin. Can. patent 224,964, Oct. 24, 1922. The burr is provided with pyramidal grinding teeth, the apexes of which conform to a cylinder, and with ribs extending radially beyond the teeth to form the leads on the stone.—A. P.-C.

D-4. Grinding Stone for Wood Grinder. Gottlieb Hohmann. Ger. patent 358,568. **Wochbl. Papierfabr.** 54, 171 (Jan. 20, 1923). This invention is concerned with an arrangement for fastening and removing the stones from the shaft.—I. G.

E—Sulphite Process

E-2. Sulphite Waste Liquors. I. I. Chramtsoff. **Bumaznaia Promyshlenost,** 1, No. 1, 39-54 (July and August, 1922). The processes and chemical reactions taking place in the production of chemical wood pulp are discussed. Analyses of the woods and of the resulting products under different conditions of cooking are given. The by products and their utilization are discussed. The question of disposal of waste waters is dealt with. Numerous data, original and quoted, are presented.—M. C.

E-2. Sulphite Alcohol. Henri du Boistesselin. **Mon. Sci.** (5), 12, 97-105 (May 1922). After a brief historical sketch of the development of the sulphite alcohol industry and discussion of the causes which have prevented its development in France, the author describes the Swedish process (Wallin and Ekstrom, and Landmark) as it is actually being worked, and the American processes (Marchand, MacKee) which are not yet being worked commercially. -A. P.-C.

E-2. Removal of Waste Liquor from Sulphite Pulp Digesters. W. Nicolai and Co., and A. D. J. Kuhn. Ger. patent 830,108. **Papierfabr.** 21, 29 (Jan. 14, 1923). A perforated metal cylinder is inserted at the bottom of the digester with a side relief for the waste liquor.—J. L. P.

E-2. Drying Sulphite Waste Liquor for Making into a Binder. C. Ellis. Can. patent 226,306, Nov. 21, 1922. The liquor (partially neutralized if desired) is evaporated to about 30 deg. Be. and is then further concentrated to a practically dry powder by atomizing in an atmosphere containing a small quantity of oxygen. It is claimed that the resulting pulverulent product is easily soluble in water and is quite stable in the dry form.—A. P.-C.

F.—Alkaline Process and Equipment

F-1. Analytical Methods for the control of chemical operations in soda and sulphate pulp mills. Rudolf Sieber. **Papierfabr.** 21, 89-94 (Feb. 18, 1923). An article consisting mostly of a review of recent improvements in analytical methods and written in anticipation of the report of the German Analysis Commission for Soda and Sulphate Mills. The following subjects are covered: raw materials, cooking liquors, cooking process, pulp, lime sludge, and by-products as turpentine and methyl alcohol.—J. L. P.

F-2. Removal of the Odors from Soda Pulp Mills. C. G. Schwalbe. Ger. patent 366,419. **Papierfabr.** 21, 29 (Jan. 14, 1923). The patent covers the use of charcoal, animal charcoal, lignite, peat and other porous coals for the removal of bad odors in the waste gases from soda pulp mills.—J. L. P. (See Pulp and Paper, p. 205.)

H.—Bleaching

H-5 Digestion of Straw by the Steffen Process. T. E. Blasweiler, **Papierfabr.** 20, 1025-28; 1061-4; 1101-3 (1922). Description of a detailed test on the bleaching of straw by the Steffen process. It is concluded that this process compares favorably with the Oexmann and other processes commonly used for the same purpose. I.G.

K.—Paper Making Processes

K-10 Sizing of Paper. Ger.patent 363,668. **Wochbl. Papierfabr.** 54, 397, (Feb. 10, 1923). Neutral or basic aluminum chloride is used as precipitant.-J.L.-P.

K-21. Production of Stock for Roofing Felt. H. Abraham. Ger. patent 366,130. **Papierfabr.** 21, 31 (Jan. 14, 1923). Sea grass is added to halfstuff and paper stock for the production of stock for roofing felt.—J. L. P.

NOTE: If you have noticed any errors in the report of the Annual Meeting of the Technical Section, please send in corrections at once.

PULP AND PAPER NEWS

The Hinde and Dauch Paper Company, Atlantic and Hanna Avenues, Toronto, has announced an increase in wages to all factory and mill employees of five cents per hour to time workers and five per cent increase in rate to all piece workers. The increase went into effect last week and has affected over 250 employees. The factory is operated as an open shop and the increase is voluntary on the part of the management.

Aubrey O. Hurst, the well-known Toronto stationer and manufacturers' agent, who died last January, left an estate valued at $40,612, according to his will which has just been probated.

The bodies of Captain John McPherson of the Michigan Sault, and Fred Regan and Gus John, of the Canadian Sault, the three passengers who lost their lives when the tug Reliance, belonging to the Spanish River Pulp and Paper Mills, Limited, ran aground and was wrecked off North Lizard Island in Lake Superior on Dec. 13 last, have been recovered at the island by an employe of the company who had been sent to make a search.

The American Sales Book Company, of which S. J. Moore, of Toronto, is president, has declared a dividend of $1, which is in line with the president's announced policy at the annual meeting last March. A dividend has also been declared on preferred at the rate of 1 3-4 per cent, payable August 1 to shareholders of record July 14. Both common and preferred dividends are payable in New York funds.

Grand & Toy, stationers, Toronto, have been awarded the contract for the year's supply of stationery for use at the City Hall and other municipal departments.

B. Collie, of Artcheson & Co., Ltd., Christchurch, New Zealand, big paper importers, was a business visitor in Toronto last week.

W. S. Barber, of the Provincial Paper Mills, Limited, Toronto, is attending the Purchasing Agents' Convention in Cleveland, Ohio.

J. H. Damp & Co., paper dealers and stationers, who have been occupying premises on Richmond Street, Toronto, have moved their offices and warehouse to 68 Dundas Street, that city.

Going to meet his father, Edward King, who is employed at the Provincial Paper Mills at Georgetown, Ont., the two-year-old son fell from the railway bridge near the mill and was instantly killed.

Premier Drury, in Toronto, was strong in his praise of the announcement by Hon. W. S. Fielding that there should be a complete probe of the pulpwood question. It had been suggested by the Finance Minister that pulpwood exportation be prohibited. This, he said, would apply to private owners since provincial governments control the provincial timber lands. It is pointed out that the projected move might meet with some opposition from the Ontario Government, as the projected export duty might interfere with the pulpwood sales of the farmers of Ontario holding patented lands. Farmers who deal in small quantities of pulpwood find a ready market for their wood in the United States when situated along the border, and one well versed in the business fears that the proposed duty would eat up the small margin of profit on these pulpwood sales.

P. L. Colbert, of the National Paper Company, Valleyfield, Que., was a business visitor in Toronto last week.

T. L. Alstead, of Appleton, Wis., head of the Great Lakes Paper Co., Ltd., spent a few days last week in Port Arthur and Fort William. He was accompanied by Hardy Ferguson, widely known paper mill engineer. It is understood that Mr. Alstead was looking over sites for the proposed new three million dollar pulp and paper mill to be erected in that district.

The Reginald N. Boxer Co., Limited, manufacturers of hanging papers, are erecting an addition to their factory in New Toronto at a cost of $125,000. The building will be one story and basement, 300 x 300 feet, and will be of concrete and brick construction. The steel work is now in progress. The extension is necessary owing to the company's increase of business.

J. Ford & Co., of Portneuf, Que., have recently completed a mill building of steel and concrete, with two floors 80 x 200 feet, and are installing a cylinder machine 120 inches wide for the production of roofing felt and other building papers. The estimated output is 20 tons a day and it is stated that the plant will be in operation in three months' time. A concrete dam, 270 feet long and 20 feet high, which will replace the old dam, and double the power, is now being built.

The Ontario Paper Company, Limited, of Thorold, who some months ago bought extensive pulpwood limits on the north shore of the Gulf of St. Lawrence from the Quebec Government, and who, in accordance with the terms of the contract are to erect a pulp and paper mill thereon, are making a survey of a location for the proposed mill, the construction of which will not be begun for some time yet.

R. F. Dobberteen, of the Standard Paper Company, Kalamazoo, Mich., was a Toronto visitor last week.

PRESENTED SAFETY SHIELD

An interesting and enthusiastic meeting of the employees of the Provincial Paper Mills, Limited, Georgetown Division, was held at the mill at Georgetown, Ont., May 16, the occasion being the presentation to the workers at the mill of the shield and flag offered for competition by the Ontario Pulp and Paper Makers' Safety Association for the best accident prevention record during 1922. The Provincial Paper Mills, Limited, were the winners of the competition in class B, which class included all the pulp and paper mills in Ontario employing under 200 people. The record established by the company during the year was a very good one, namely 3 non-fatal accidents involving lost time amounting to 56 days, which is equal to 8.5 days lost time per full time worker. I. H. Weldon, President of the company occupied the chair at the meeting and gave a short address telling the employees how pleased the company was at the success of the Georgetown mill in winning the coveted honor and heading the list in the accident prevention competition. Mr. Weldon then called upon A. P. Costigane, secretary-engineer of the Association, who gave a short address on the economic aspect of accident prevention and impressing on the workers that if they intended to retain the shield in their possession they would require to face keen competition on the part of other mills which were eagerly striving to secure the honor. Mr. Costigane then presented the flag to Sidney Sanders who received the trophy on behalf of the employees of the mill and who responded for them, emphasizing the benefits to all the workers when whole-hearted co-operation is given by every one in the prevention of accidents, not only to themselves, but to others. Mr. Sandets was followed by Mr. McWhirter, superintendent of the mill, who spoke briefly promising co-operation in an effort to retain the trophy for next year. Before the gathering broke up a resolution was adopted to the effect that all present would put forth every effort to win the shield again by establishing even a better record this year than last.

WESTERN QUEBEC PAPER MILLS LTD.

Announcement was recently made in the Press of the organization of the Western Quebec Paper Mills Limited. This new Company is organized to manufacture light weight specialties and tissue papers. The site obtained for the mill is at St. Andrews, Quebec, on the North River near its junction with the Ottawa. There is particular significance in the selection of this site, as it is probably on the same ground on which was erected the first mill in Canada some 120 years ago. Great changes have taken place in those years in the processes for paper manufacture. In those days rags were used as the material for fiber, whereas today we are making high grade papers, as the new mill will do, from chemical fibers manufactured from wood. There is one feature of the site which still has the same advantage that it had in the older days, namely the high quality of the water of the North River for paper-making purposes. It will be recalled that a little way further up the river are mills making some of the finest papers turned out on this continent. The location of the new mill will be picturesque as well as historic.

Considerable of the equipment is already arranged for and construction of the mill will proceed immediately with the prospect of manufacturing paper early in the fall. The financing of the proposition has been provided for by the sale of $225,000 in bonds, which are in the hands of Shaer, Morton & Co., Ltd., 120 St. James St., Montreal, and are offered to the public at the price of 97 and interest, yielding 6.75 per cent.

Practically the whole of the output of the mill is said to be contracted for and since there has been but little expansion in this line of paper manufacturing in Canada recently, it is not expected that the introduction of this new production will have any effect on the market conditions.

It may be added that the mill will be provided with excellent shipping facilities, both by rail and water. Another advantage in establishing the mill in a town such as the municipality of St. Andrews, is that there is not only a sufficient supply of ordinary labor but there is accommodation for the influx of new labor that always comes with a new industry, until additional houses may be built. The Company's extensive site will facilitate the development of a very beautiful paper mill town, which will be within 50 miles of Montreal on the direct line of the Canadian National Railway to Ottawa.

Among those interested in this proposition are Mr. R. W. Barclay, President Western Quebec Power Company; Mr. C. DeWolfe Reid who is well known to the industry as paper merchant and mill agent; Mr. C. W. Morton, Director of the Saguenay Lumber Company, Mr. William Currie, Director of the Dominion Paper Company; Mr. J. M. Robertson, Director of Southern Canada Power Company

BROMPTON PAY MORE ON ARREARS

Brompton Pulp and Paper directors have declared another payment on account of arrears of preferred dividends, making 4 per cent in two months and reducing the arrears to 8 per cent.

The current payment of 2 per cent is for the quarter ended April, 1922, the payment made a month ago being for the preceding quarter.

The company continues to operate to capacity with improving prices in some lines. It is stated that some ground wood pulp was recently sold as high as $50 per ton, although this is not as yet the standard price. When it is recalled that this commodity sold as low as $25 per ton a year or more ago, it will be seen that there has been a marked improvement in the market.

COURSE OF PAPER PRICES IN ENGLAND

There is a definite feeling in England that paper prices must advance without delay, says the London "Times Trade Supplement". Very probably it will have been decided to make an all-round advance in the selling price of printing and E.S. writing papers before these notes appear (April 28). An important meeting will have to be held at which the subject will at least have been subjected to full examination. It is common knowledge that much of the paper now being sold is actually made at a loss. The policy of the British papermakers has been to anticipate falling costs in the endeavour to stimulate confidence and promote business. The policy has proved very successful, but lower costs have not matured in accordance with anticipations. There was ground for thinking that the cost of living would progressively decline, in which event a smaller wage bill would automatically have come into operation. Yet wages have not been reduced, and within the last few days a further slight concession in railway goods rates has been offset by the advance in coal prices by about 12s. per ton, consequent upon an increased demand for coal for shipment. Papermaking materials have advanced, and some anxiety is felt in regard to the effect of the Swedish lock-out upon the future trend of wood-pulp prices. — Commercial Intelligence Journal.

A generous spirit is better than gold, and does not need gold to show itself—The Westland.

Mr. Archie Fraser, of Frasers Limited, Edmundston, N.B., who has just returned from a trip to England was in Montreal last week.

At last week's meeting and luncheon of the Commercial Stationers Association of Toronto, Percy Grand, of Grand & Toy, gave an excellent address on "the cost of doing business."

Mr. S. J. B. Rolland and daughter, are spending a holiday in France.

BRITISH TRADE NEWS

(From Our London Correspondent)

London, May 7, 1923.

The feeling in the British paper industry on trade out look is more optimistic. At present business is developing, mills are getting more busy and unemployment is being gradually reduced. Dr. E. C. Snow in a short paper read before the Royal Statistical Society, on "Trade Forecasting and Prices," has stated that the tide of industrial prosperity was flowing and that, although it was a long way from the full tide, it was, nevertheless, moving at such a rate as to promise that state within reasonable time. He thought that view under-estimated the effect of certain retarding factors which were in operation in the upward movement of the present industrial cycle to an extent far greater than in previous cycles. At the height of the boom in the early part of 1920 most British industries were equipped for a production far greater than had ever been attained before the war, and certainly far greater than home consumption plus prospective export trade at present. Over-production, actual or potential, was the inevitable result and this in itself retarded recovery from the depression. It would be of the utmost possible value to certain industries at the present time, if it were possible to disseminate statistical information among those engaged in them showing productive capacity in comparison with that of pre-war and of prospective demand.

British Exports

Turning to the recent export figures of the British paper industry, one finds that there is a considerable development after analysing them. Exports for the three months, January to March, show that they reached 1,021,839 cwts, compared with 404,051 cwts for the corresponding period in 1922. This is a sign of progress and the packing and wrapping sections have shipped—not counting home consumption—118,427 cwts, as against 64,448 cwts for the three months in 1922. Printing paper, which includes newsprint, was exported to the extent of 686,522 cwts, an increase of 587,645 cwts. The increase is largely attributable to Canada and Australia with other colonies and dominions purchasing larger quantities. The exports of tissue paper are about steady, while the trade in roofing papers is completely lost. Mill board, strawboard, and cardboard have only increased in the exports from 16,132 cwts to 23,129 cwts.

The exports in printing paper (newsprint included) are as follows:—To Canada 4,429 (695 for the first three months in 1922); Australia, 411,315 cwts (76,789 cwts in 1922); New Zealand, 57,420 cwts (18,126 cwts); Ceylon, 4,128 cwts (2,234 cwts); Straits Settlements 2,374 cwts (1,031 cwts); India, 63,625 cwts (21,103 cwts); South Africa, 32,126 cwts (13,512 cwts); other British possessions 7,571 cwts (3,944 cwts); U. S. A., 20,553 cwts (1,608 cwts); France 17,224 cwts (13,376 cwts); other foreign countries 65,657 (46,459 cwts).

British Imports

The total imports for the first three months of this year have reached 2,676,230 cwts compared with 2,081,533 cwts for the corresponding period in 1922. Shipments from Canada have not actually started yet, nor from Newfoundland, as it is too early in the year for them.

The countries competing with Canada in packings and wrappings are as follows:—From Canada 24,976 cwts (24,749 cwts in 1922 from January to March 31); Finland, 94,367 cwts (76,213 cwts); Sweden, 308,471 cwts (205,969 cwts); Norway, 173,563 cwts (142,867 cwts); Germany, 185,115 cwts (107,702 cwts); Belgium, 20,370 cwts (21,625 cwts); other countries 58,453 cwts (63,948 cwts).

Newsprint supplies are recorded as follows:—From Sweden, 110,091 cwts (100,579 cwts in 1922); Norway, 134,897 cwts (127,621 cwts); Germany, 33,284 cwts (37,762 cwts); Belgium, 2,956 cwts (9,697 cwts); U. S. A. 4,777 cwts (1,298 cwts); Canada, 55 cwts (none for the same period in 1922); Newfoundland, nil, (10,280 cwts); other countries 293,296 cwts (275,801 cwts).

Coated papers were imported as follows:—From Germany 14,171 cwts (7,852 cwts). Here we see that the occupation of the Ruhr by the French has not materially hampered the German mills. From Belgiun 4,247 (4,956 cwts) which shows that the occupation is interfering with the Belgians. From France 3,734 cwts (3,620 cwts); U. S. A. 1,565 cwts (1,709 cwts); other countries 6,205 cwts (2,640 cwts).

Strawboard—From all sources 818,285 cwts as against 576,592 cwts for the three months in 1922.

Millboard and cardboard—259,724 cwts, as against 141,974 cwts.

Wood Pulp Shipments

There is more liveliness in the British wood pulp market and sellers are making inquiries as to supplies. The demand for chemical pulps is fair; for groundwood prompt supplies prices are firmer. Judging by the reports reaching London, mills are once again getting into working order in Scandinavian circles after the recent labor troubles.

The total supplies of pulp reaching the United Kingdom for the first three months of this year, reached 192,306 tons, compared with 97,249 tons for the corresponding period in 1922. The countries sending shipments were as follows:—

Bleached chemical (dry)—From Finland 613 tons (202 tons in 1922); Sweden, 424 tons (895 tons); Norway, 4,509 tons (2,794 tons); Germany, 85 tons (275 tons); other countries 378 tons (290 tons).

Unbleached Chemical (dry)—From Finland 15,264 tons (5,208 tons in 1922); Sweden 36,404 tons (17,359 tons); Norway, 19,064 tons (7,323 tons); Germany 74 tons (234 tons); other countries 3,086 tons (1,638 tons).

Groundwood (wet)—From Canada 2,778 tons (7,700 tons); Sweden, 11,381 tons (8,054 tons); Norway 94,664 tons (42,773 tons); other countries nil.

Groundwood (dry)—From all sources 2,367 tons compared with 532 tons in 1922.

Pulp prices to-day in London are about as follows:—

Bleached sulphite (No. 1) £23 1-2; easy Bleaching £16 1-2; Newsprint Sulphite £15 3-4; Unbleached Soda (No. 1) £15 1-2; Soda Kraft (strong) £15; groundwood (wet) £15; groundwood (wet) £5 3-4; groundwood (dry) £11 1-2.

Clarke City

It is reported here that arrangements are being made to redeem the balance of the outstanding debentures of the Imperial Paper Mills Ltd., of Gravesend, Kent. In 1920 £800,000 of 7 1-2 p. c. debentures were issued and the guarantees were given, both as to principal and interest, by the Amalgamated Press, Ltd., of London, one of the leading publishing houses. The debentures were issued for the purpose of acquiring control of the Gulf Pulp Paper Co. at Clarke City, Que., a pulp mill and timber limits in Canada. Of the total £200,000 has been redeemed and the balance will be paid off at £103 in July next.

Dividends

John Dickinson and Co., Ltd. have made a net profit of £134,401 10s. and a dividend of 10 p. c. has been declared for the year.

Wiggins, Teape and Co., Ltd., have also declared a dividend of 5 p. c.

All firms speak well of their trading since January last.

UNITED STATES NOTES

The International Paper Company has completed arrangements under which the Metropolitan Life Insurance Company will insure all the employees of International and its entirely owned subsidiary companies. All employees of at least six months' service will be eligible without examination and will bear a small weekly cost, the remainder to be paid by the company. The plan includes life insurance, protection against permanent and total disability, sick and accident benefit and special indemnity for accidental death or dismemberment. The employees have been divided into three groups according to their annual earnings and the amounts of various benefits have been graded proportionately. Reports have been current for some time past that the International was to merge with some of the larger Canadian paper manufacturing companies. This report was officially denied by officers of the company last week.

C. R. Berrien, vice-president of the Central Union Trust Company, M. M. Marcuse of the Bedford Pulp and Paper Company, Richmond, Va., and William Mason Smith have been elected directors of the American Writing Paper Company, increasing the board from fifteen to eighteen members. The directors have elected as new officers, M. E. Marcuse, vice-president; L. S. Noid, treasurer, and James T. Robinson, secretary.

Formulation of Treasury Department rules governing the classification of standard newsprint paper under the Tariff Act is awaiting the personal decision of Secretary Mellon. The Tariff Act admits imports of standard newsprint duty free, but a long controversy has been waging between the Treasury and publishing interests as to what grades of paper should be admitted under that classification. Publishers have insisted that the law is broad enough to permit the free entry of special types of paper used in photographic and other supplements.

The United States continues to be a strong buyer of Swedish wood pulp, according to statistics just received. American paper mills have already purchased 100,000 tons of bleached and unbleached sulphite since the beginning of the year, and it is predicted that this figure will at least be doubled before the end of the year. The report also says that 95,000 tons of sulphate cellulose have been purchased for delivery to America this year.

Five measures to conserve the wood pulp supply are suggested by O. M. Porter, secretary of the woodlands Section of the American Paper and Pulp Association, in the Association's monthly bulletin. They are: First — a comprehensive survey of domestic supplies; second — a careful study of the probable costs and yields from artificial reforestation; third — the development of practical plans for forest management to insure a continuous production; fourth — sound Federal and State forest legislation, and, fifth — forest education for the public, the owner and the operator. Mr. Porter states that $1,000,000,000 is invested in pulp and paper mills in the United States, that the annual paper production is valued at $1,000,000,000 and that $250,000,000 a year is spent for pulpwood and wood pulp.

Development of a non-shellac phonograph record by European chemists, making it possible to use blotting paper, leather, cardboard, or other paper, linen or cotton cloth as a base, has interested American manufacturers who have made arrangements for beginning production shortly. The new process, instead of requiring the moulding of a record enables the discs to be printed, and to be turned out on rotary presses at the rate of fifty thousand a day. The new method of manufacture, its originators say, has the advantage of making the records flexible, unbreakable and nonchippable. To produce these records on a quantity scale, the Strong Record Corporation has been organized with headquarters and laboratory at 206 Fifth Avenue and factory at Point Pleasant, N. J.

The directors of the United Paperboard Company have declared a dividend of 6 per cent. on the preferred stock for the fiscal year, ended May 26, 1923, payable July 2, to stockholders of record June 7. This is the first dividend declared on the preferred stock since the regular quarterly payment of 1½ per cent. was passed in November, 1920.

The labor situation in the paper industry, according to the bulletin of the American Paper and Pulp Association, is being clarified with agreements on increased wage scales which will insure the manufacturers against strikes, though increases are general. In the Holyoke district the fine paper makers are faced with wage demands which would equal the peak figure of 1920.

NEW PULP MILL FOR QUEBEC

A new groundwood pulp mill, with a daily capacity of 100 tons, will be built this summer at Sillery, near the city of Quebec, by the Quebec Pulp & Paper Company, Limited, a new corporation organized through the efforts of John D. Roche of Montreal. The plans include provisions for expanding the plant to produce sulphite pulp and newsprint paper whenever it is desired to make the necessary additions. The mill will be exceptionally well located in regard to shipping facilities, having both rail and water connections and the company is also said to have made favorable arrangements for its supply of pulpwood.

The financial and other details have all been arranged and a public announcement, including the names of those concerned in the enterprise, which include some well known to the industry, will be made soon.

The Markets

CANADIAN TRADE CONDITIONS

Although it is generally admitted that the future holds much that is promising in the pulp and paper arena the fact remains that the distributing end of the industry in Ontario is still lagging. Wholesale paper merchants are not doing the business they were looking for at this season of the year and the cause is generally ascribed to the backward spring. Some distributors report slightly increased sales so far this May but the bulk of the trade express disappointment at the results. Few of the retailers, printers and publishers are not stocking paper to any extent although there is a bright spot in lines such as bonds, writings and other lines of paper used by the converting trade, uch as the manufacturing stationers, who are fairly busy. The paper box making trade has not yet revived following its recent decline in volume of business and the fact seems to be that the backward spring upset all calculations of the various lines of trade that form the feeders for the paper box industry. There has been a marked falling off in the consumption of standard lines of paper boxes although many of the firms have been making good on the developing and sale of specialty boxes.

In contrast to the wholesale paper business the manufacturing trade continues fairly busy and in nearly all branches — especially that of newsprint — there is a well-sustained demand, with plants all running at capacity. The book paper mills have orders booked well ahead and there has been no falling off in demand for the products. The changed and changing ratio of cost and price has caused one large manufacturer of book papers to withdraw prices and quotations. In the case of board manufacturers the mills are reported to be not more than three weeks ahead with orders, which is considerably below the average.

The pulp market presents no new features and prices are unchanged. Generally speaking there is little activity and few of the paper mills are stocking, the feeling prevailing that prices will ease off somewhat towards the end of the month now that water and more power are in prospect following the spring break-up.

NEW YORK MARKETS

New York, May 19 (Special Correspondence). — Mill activity continues on a broad scale, and there is a fairly good demand from retail quarters for most kinds of paper although it is commonly admitted current buying lacks the snap that was such a feature of the market up to a short time ago. Consumers seem more hesitant about placing orders at present, which is not an unusual condition at this period of the year, and it appears certain that the paper that buyers are absorbing today is moving almost directly into consumption. Moreover, a great many users, including a large proportion of printers and publishers and other big consumers, have appreciable supplies of paper on order and these are in a majority of cases holding off from additional purchasing while depending on mill deliveries.

There is little change to report in prices of paper. The price tone is steady to firm. The tendency in most instances is decidedly upward, yet there are numerous indications that manufacturers are exerting every possible effort to prevent inflation, and presumably are considering more the maintenance of demand than the advancement of prices. Raw material costs are changing in favor of manufacturers in at least some instances though this is far from always the case. Wood pulp is holding firm, as are many grades of rag stock; on the other hand, prices of low grades of papermaking rags and on most descriptions of waste paper are on a more favorable level for consumers than they were a few weeks ago. Labor, however, is the all important factor today, and it may be that the wage increases recently put into effect will ultimately result in higher quotations on paper.

Sentiment in the trade regarding an advance in newsprint prices seems to be changing, at any rate in certain quarters. Despite the many predictions that higher labor and raw material costs would necessarily oblige manufacturers to increase print paper prices, probably after July 1 to $80 a ton, compared with a current general quotation of $75, there is a well defined opinion in some parts of the trade that they will not materialize and that prices will remain unchanged over the third quarter of the year. Of course, this is a problematical matter at the moment, but it is a subject which is being given a great deal of attention by paper men, and it is interesting to note that sentiment concerning it is so well divided.

Newsprint consumption this year is running ahead of all previous records, and it is indicated that 1922 consumption figures, which were the largest in history, will be exceeded by about 12 per cent this year. Newsprint mills in both the United States and Canada are being taxed to meet the demand, and while it is commonly admitted that there is some justification for an advance in print paper prices on account of higher manufacturing costs, it is pointed out that consumption could be very easily curtailed by elimination of many special features and supplements, especially in the Sunday editions of newspapers, and that for this reason manufacturers will be loath to do anything which might tend to restrict consumption unless it were absolutely necessary.

"The basic strength of the paper market in general is indicated by the fact that there seems to be no speculative demand; the orders being received being strictly to meet pending requirements." This is the way in which the American Paper and Pulp Association sums up the prevailing situation in its monthly bulletin. The association goes on to say that "caution, but not timidity, the suggestion made by Secretary Hoover before the United States Chamber of Commerce, expresses the attitude actually being taken by the paper industry at this time. The paper manufacturers, in the face of the heaviest demand ever known in some branches of the industry, are not taking advantage of the increasing cost of raw materials and

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of [illegible] to present [illegible]. In one important branch of the industry, for example, [illegible] are 98 per cent higher than in 1914, and [illegible] are 104 per cent higher."

Some manufacturers of book paper are reported to have revised quotations on certain of their lines, following the lead of one of the large companies recently reported. Prices of book paper display much strength, and demand for this class of paper continues active. That is, the contract movement is good, and publishers are augmenting their supplies to a fair extent although retail buying has subsided.

Fine papers are quotably firm and are in steady call. Wrappings and tissues are moderately active, with no further change reported in quotations. Box boards have firmed up again after having shown a sagging trend for a time. Most manufacturers in the East are quoting $62.50 per ton f. o. b. New York for plain chip board, and $65 for news board, though one of the largest mills in this part of the country is said to be naming $62.50 on both news and chip. Demand for board is regarded as good. Corrugating boards and other lines used in the manufacture of fibre shipping containers and folding boxes are moving freely, while demand from the set-up box trade is relatively quieter.

GROUND WOOD.—The market for mechanical pulp is characterized by fair trade activity. It is evident that consumers are buying chiefly against direct requirements and yet the movement into consuming channels is fully up to normal for this season, if not in excess of normal. Available supplies appear to be easily ample to cover the wants of buyers, however, and prices consequently are just about holding their own, exhibiting little change in either direction. Domestic producers are reported securing about $37 to $38 a ton f. o. b. grinding plants for prime spruce ground wood for prompt shipment, with quotations varying depending on the situation of the consumer and the freight involved from the producing to the delivery point. Canadian grinders are said to be marketing considerable ground wood in the United States at present, and to be securing between $47 and $50 a ton delivered at consuming mills for spot shipments.

CHEMICAL PULP. —Actual demand for chemical wood pulp is of limited compass. Consumers are placing orders in a most reserved manner, evidently being altogether unwilling to buy other than in a volume necessary to cover immediate needs, and demand therefore is spotty and of insufficient breadth to have influence on prices. Nevertheless the price tone is firm. Importers are bullishly inclined and are fully maintaining operations. Foreign prime unbleached sulphite is quoted on the dock at New York at 3.35 to 3.50 cents per pound and Scandinavian kraft pulp at around 3.40 cents, and proof is not lacking that very little supply of these pulps is to be had at less than these figures. Foreign bleached sulphite is quoted at from 4.50 to 5 cents a pound ex dock for the No. 1 grade, and around 4.25 cents for the No. 2 quality. Papermakers apparently are holding off in buying because they have considerable pulp on order for first open water shipment out of Sweden, and because they desire to wait and see what effect the arrival of these supplies will have on prices.

RAGS. —The market for papermaking rags is in a rather stationary position at present. Low grades such as are used by roofing paper mills incline downward, and buyers doubtless are effecting some purchases at slight recessions in price, but most grades are holding their own in price and seem to be marked by a comparatively good demand from mills. Importations of rags are heavy. Large shipments are arriving day by day, and it is presumed that the great bulk of these supplies are roofing stock, thus explaining the relative easiness in prices of domestic rags of similar classification.

Quotations on No. 1 roofing rags range around 1.40 cents a pound f. o. b. New York for No. 1 packing, and 1.30 cents for the No. 2 grade. New white shirt cuttings have eased off slightly to where sales to paper mills at 13 cents a pound have been reported, and other grades of new cuttings are probably available in at least some quarters at slightly cheaper figures than recently prevailed. Old white rags are quotably steady, as are blues. Repacked thirds, and blues are fetching around 2.75 cents a pound at dealers' shipping points, and miscellaneous packing about 2.25 to 2.40 cents, depending on quality.

PAPER STOCK. There is a fair aggregate movement of old paper. Some grades are freely wanted by mills, while others are more or less neglected; the result is that prices in some instances display steadiness, whereas in others the trend is distinctly downward. Old folded newspapers are steady at around 1.15 cents a pound f. o. b. New York, and No. 1 mixed paper is readily bringing 90 to 95 cents a hundred pounds New York. Old kraft paper also is steady at 2.10 cents a pound New York, and shavings are quoted at an average of 4.25 cents New York for No. 1 hard white and 3.50 cents for No. 1 soft white shavings. The weakest class of old paper is flat stock. Few mills show interest in books and magazines, and it is problematical just how cheap they really are. Offerings by dealers at 2 cents a pound for No. 1 heavy magazines are reported but there are few buyers at this price basis, and indications are purchases are being made at lower levels.

OLD ROPE AND BAGGING. —The market for old manila rope has quieted and prices have eased a little following a long period of pronounced strength and activity in this commodity. The principal consuming mills are reported out of the market temporarily, and prices of domestic manila rope in No. 1 condition have sagged to about 6.50 cents a pound at dealers' shipping points and ranging up to 6.75 cents. Old bagging is dull and largely nominal in price. Around 1.25 cents per pound and 90 cents a hundred pounds at shipping points for No. 1 scrap bagging and roofing bagging, respectively, are the quotations generally named by dealers.

LINK-BELT PITTSBURGH OFFICE MOVES

Notice has recently been received of the removal of the Link-Belt Company's Pittsburgh branch office from their old quarters at 1501 Park Building to their new and more commodious offices at 353 Fifth Avenue. Mr. T. F. Webster, manager of the Pittsburgh office says that larger space and the more convenient location was imperative because of the extraordinary volume of business transacted during the past year and which promises to remain in full swing at least for the coming fiscal year.

Mr. Hardy S. Ferguson, consulting engineer, of New York, was a visitor to Montreal last week.

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WOOD PULP AGENTS

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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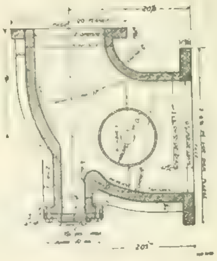

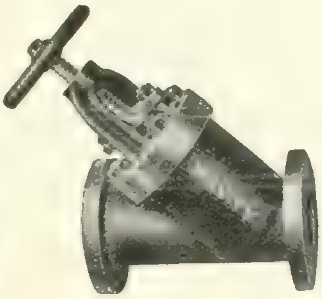

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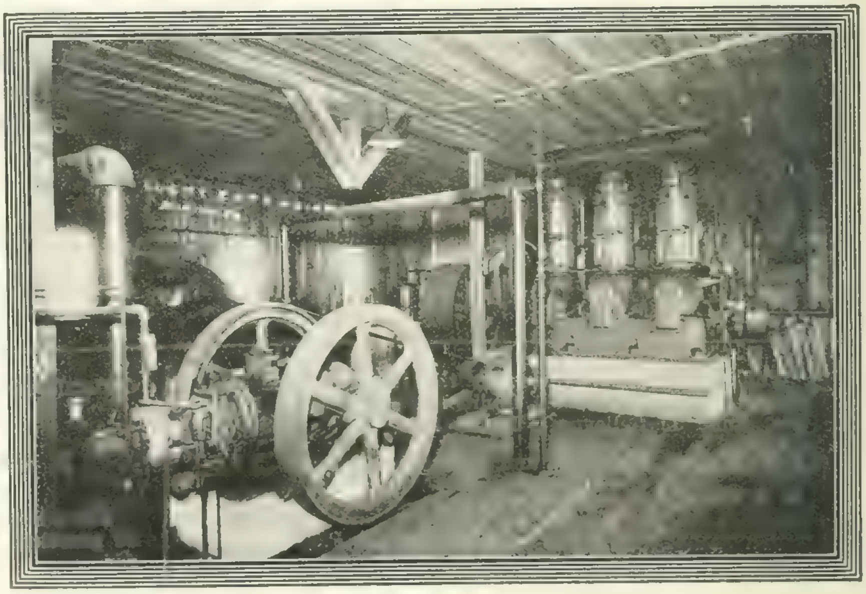

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:-: EDITORIAL :-:

THE NEWSPRINT PRICE

Since the first of the year there has been quite a wide-spread feeling that for the second half of 1923 the contract price on newsprint might be advanced to $80 per ton. There have been a number of factors which support this view, among them the recent advance in wages and the increasing cost of manufacture. It was quite a surprise to the trade, therefore, when the announcement was made the other day that the International Paper Company would maintain the present price of $75 for contract agreements throughout the current year. On the face of it, this will seem to a good many people like throwing away a chance of gathering $5 a ton more than is coming in at the present time, but the Management of the International Paper Company is more farsighted than to see only the immediate benefit of such a step as a great many expected would be taken at this time. It is quite evident that, when prices reach a certain point, there is a critical position beyond which if the price is pushed there will be a decrease in consumption. Certain operating costs have to be met any way, and, once they are covered, increased production means more than a decreased production at a higher rate. The increase in production further has the beneficial psychological effect of keeping a larger number of people employed, and in this way it has a valuable social influence.

In spite of certain increased items of cost it is known that many mills are now enjoying a greater production per employee than has been the case for a number of years. It is not likely that the recent increase in wages which was arrived at in a most amicable manner will have the effect of decreasing individual effort. No doubt this factor was one having a considerable influence on the decision to maintain the current prices of newsprint throughout the second half of this year.

We feel that the Management of the International Paper Company is open to congratulations for their stand on this matter at this time. There has been a tendency growing for a number of months past to increase prices on a great many commodities, and among these are some of the basic commodities required by our people. If every manufacturer takes every opportunity that comes to him to add a little to his price, there will be no end to the process, but in the determined stand of an influential company in an exceedingly important industry — particularly if the lead is followed by similar action on the part of other large manufacturers — we are likely to see not only a general flattening out of the curve for commodities immediately connected with the pulp and paper industry, but also a very helpful and healthful reflex action on other general commodities and services. It must be perfectly evident to every employee in a paper mill that, if his wages increase, and if the cost of the raw materials that he manufactures into the finished product increase in price, and the manufacturer keeps his selling price at the same figure, there will be less profit to the manufacturer, and consequently a less reserve to carry over hard times, for carrying inventories of materials, for paying insurance premiums, maintaining healthful conditions, building cottages and the like; and, being a sensible and observing individual, the employee in the pulp or paper mill will see to it that he gives his best effort to the maintaining of production at a maximum amount. It is only by the most cordial coöperation in this way between employers and employees that the industry can be maintained on a profitable and progressive basis.

CUMBERSOME TAX COLLECTION

Under the new tariff, certain changes have been made in the Sales Tax which affect the pulp and paper industry, in common with other branches of commerce. Not only has the tax been increased to 6 per cent, but an alteration had been made in the method of collection, the object being to tax the finished article rather than the raw materials. It is provided that a manufacturer or producer who produces goods to the value of $10,000 or more, during any fiscal year, shall take out an annual license, but the Minister may direct that a manufacturer or producer, who does not manufacture or produce goods to the value of ten thousand dollars a year, and who uses a substantial portion of goods which are exempt from the tax in the manufacture of goods which are liable to the tax, shall take out a license and shall be subject to the same conditions as the licensed manufacturer or producer. The wholesaler or jobber who sells not less than 30 per cent. of his total sales of goods to a licensed manufacturer or producer to be used in articles to be produced for sale, may take out an annual license. The tax is payable by a licensed wholesaler or jobber at the time of the sale by him to other than a licensed manufacturer or producer of goods.

The question arises as to how this scheme is to be applied in the case of products such as pulp and paper for conversion purposes, boards, and other products, which are passed along by the original producer to another manufacturer for conversion into a finished article. It is clear that what is a finished article for one section of the pulp and paper industry, is the raw material for another, and on the face of it, it looks as if the scheme will lead to considerable confusion.

It is understood that the Finance and Customs departments are now making regulations which may straighten out this matter, the idea being that the last licensed manufacturer who handles the commodities for the purpose of making the finished article, will be responsible for the tax. The mills will only be chargeable with the tax in cases where they sell direct to the consumer or to unlicensed manufacturers. A licensed jobber or wholesaler who sells to an unlicensed manufacturer will pay the tax, incorporating this into the price of his goods. The licensed manufacturer or jobber who handles the goods last will pay, no matter how many hands the goods may pass through. This will probably involve a considerable amount of book-keeping, and add to the expense of doing business. Taxes of this character are regarded by many as likely to hamper business, as likely to cause considerable delay, and as vexations in their nature. Of course, the money has to be raised, but the new scheme concerning the Sales Tax appears to be very cumbersome and unsatisfactory, especially from the collection point of view.

The Dominion wide protests against the new method of collecting the Sales Tax is evidence of the dissatisfaction with the proposed regulations. Practically every industry will be affected by the plan, which, judging from its complicated character, has been evolved by men who have no practical knowledge of business, and apparently have not calculated how such a scheme will work.

It looks, indeed, as if the advisers of Mr. Fielding have set up a plan which will give the maximum amount of trouble to Canadian industries. Many men, who have clearly studied the new form of taxation, are of the opinion that it opens the way to evasion, and that the honest manufacturer who pays the tax will thus be handicapped when it comes to competition.

The tax will not affect all industries alike, because they are different in their nature, and in their methods of doing business, and some will be more seriously hit than others. Mr. Fielding has already made some changes; for instance, the tax will not be operative until January 1, 1924, instead of August 1 next, and there has also been an alteration in the clause affecting jobbers' licences. The list of articles subject to tax has been amended, so as to make the tax apply to job printed matter produced and sold by printers or firms, whose sales of job printing do not exceed ten thousand dollars, per annum.

Newsprint, which was exempted has been included in the articles liable to the tax. It was explained by Mr. Fielding that the exemption was due to an error, so that the whole of the paper industry is now liable.

Taxes of this character, which interfere with trade, are very unsatisfactory forms of raising revenue, in that they are costly to collect, involve a great deal of book-keeping, a large amount of trouble, and generally are very undesirable. No one likes taxes of any description, but as they are inevitable, the more simple the form, the better for everyone concerned. — F. H. D.

COBWEBS

The statement that Canadian railways will run special newsprint trains is evidence of the desire of the managements to render adequate service to Canadian industry as well as being an indication of the growing conception on the part of the public of the important place that the pulp and paper industry holds. A number of speed records have been established on special occasions and by special routing and rushing. It is now probable that newsprint made Friday morning in any mill in Ontario or Quebec will be in the customer's press room or warehouse in New York, Boston, Chicago, Philadelphia, Cleveland, Detroit, etc., on Monday. If this service can be maintained, it will mean an enormous saving to the newspaper publishers. Few people realize the cost of warehouse rent and the carrying charges on large stocks of paper valued at $75 a ton. To cut these stocks from four or even two weeks' supply to enough for one week is a very important factor in economical production. The only other reason now for carrying a stock of paper is fear of labor trouble, and, we feel sure, the danger of any serious disruption of this sort is becoming more and more improbable.

Rumors still persist, or perhaps they are cultivated and continue to bloom, about Montreal to the effect that there is likely to be an amalgamation of pulp and paper mills in the St. Maurice Valley. It is some time since there has been an amalgamation of paper mills. The most recent and important examples have been the organization of the Spanish River Pulp & Paper Mills, as it is today, the Provincial Paper Mills Limited, and the Howard Smith Paper Mills Limited. There are a number of obvious advantages in a large organization, and certain cost factors can usually be lowered. On the other hand, the principal disadvantage seems to be that, coincident with practically every amalgamation, there is issued a larger amount of securities than was covered by the original enterprises, and consequently a considerably larger margin of profits is generally required to maintain dividends on new issues.

Insurance of Pulp and Paper Mills

Extracts from a speech by J. D. Erskine, The
Northern Assurance Company of London

As we are interested in the subject of paper making mainly from a fire insurance viewpoint, and only to the extent that we may obtain information on this subject which we can use in our business of underwriting, I shall not attempt to give here the history of paper making. It is sufficient to say that cotton, hemp and linen rags were practically the only materials, used in paper making until 1840 when a German determined that the fibre of wood pulp could be advantageously used. Today, wood is the most important ingredient in paper making. It is a fair estimate to say that 90 per cent of the paper manufactured is made of wood, principally of spruce and hemlock.

The United States is the largest consumer of newsprint in the world and also the greatest producer, although in this latter respect closely pressed by Canada. So prodigal has been our use, so wasteful our methods and so neglected our practice of reforestation that it is only a matter of a few years before Canada will have passed us in the production of wood pulp. I recently saw the statement that in the past ten years the production of news print in Canada had more than trebled, whereas, only two new mills had been established in the United States. Although this country now imports large quantities of wood pulp from Canada and Scandinavian countries, it is apparent that the future of the mills already established in this country depends upon the success attending our efforts in reforestation in the immediate areas of those mills. We have exploited our resources in the East, where our mills are now largely centralized, and must now look to the West, the South and to Alaska for our supply. It is likely that now new mills will be established in those regions, and it follows that the East will be less a factor in the future development of the business. Already we have noticed that some of our eastern mills have shut down indefinitely, and an idle mill with an uncertain future deserves the careful consideration of the Underwriter.

Our subject will be more interesting if you can visualize a typical risk. The large mills are usually located on rivers affording water power. The mill consists of a close group of buildings, generally of mixed brick, frame, and concrete construction, varying in height from one to four stories. Although the majority of the buildings in the group will not exceed one or two stories in height, the digester building and acid towers are usually the equivalent of three or four stories in height, and are, together with the pulp wood piles, the conspicuous features of the group. The risks are usually sectional, but it is not uncommon to find numerous communications between sections. In good risks, these openings, whether doors or windows or belt openings, ar so far as possible, protected by standard fire doors and shutters.

The small paper mills, of which we find many, differ in general from the large mills in that the small mill is usually a one section risk, and as a rule has no pulp mill in connection with it, but uses as raw stock pulp prepared elsewhere together with old paper and rags. As unsprinklered propositions these risks are not attractive. If they are country risks, as they often are, their degree of private protection is scant. The buildings are not apt to be kept in good repair; the buildings, themselves, are old and show their age. There are, of course, unsprinkled and unprotected small paper mills which, because of good management or good construction are fair risks, but in this class good management seems rather the exception and management is always an important factor in determining the acceptability of a fire risk.

In this class of risk, management and administration are of great importance. The large mills are very often country risks. The employees housed in tenant dwellings form a small community dependent upon themselves for fire protection. It is important that the superintendent and foreman be practical engineers and mechanics competent to supervise the yard hydrant system and to make emergency repairs throughout the plant. There is no class of risk which more than the paper mill needs careful supervision. The entire water system, embracing engines, pumps, standpipes and hydrants must be carefully supervised by local plant engineers and the bureau inspectors, If a sprinkler system is installed, and probably the majority of the large plants are now equipped with sprinklers, the bureaus provide inspection service. The dampness which prevails in certain sections of the plant, tends to corrode the heads and piping so that constant care must be given to see that corroded heads are replaced by new heads wax coated and that corroded piping is replaced by new piping treated with rust proof paint. The dry valves controlling the dry piping in unheated sections of the plant require inspection.

The storage of pulp wood should here be considered. Pulp wood is an important subject of insurance as values at some locations run as high as $500,000. Furthermore the piles are sometimes located so near mill buildings as to constitute a serious exposure. The logs are cut in lengths of 2′ to 4′ and are usually rough stacked in conical piles sometimes 50′ or 60′ even 100′ high. For convenience in handling, the pulp wood is stored near the grinding mill but it is obviously good practice to provide a clearance of not less than 100′ from any important building and even a larger clearance if the piles are high. The individual piles may average from 5,000 to 20,000 cords and ample clearance should be maintained between piles. Large yards which are well administered have flood lights and search lamps and good watchman service. Frequent rounds are made, and the watchmen ring boxes or telephone to a central station. Protection should be afforded by hydrants on a loop of large main and we frequently find monitor nozzles on high platforms close to the piles, and sometimes mounted on the piles themselves. These nozzles swing on a fixed pivot, an arrangement similar to the lawn sprinkler, and the logs are wet down every day during dry weather. It is so difficult to check a fire well under headway in wood piles that the prevention of fire is a matter of importance. The hazards to be guarded against are smoking on the premises, fire caused by defective electrical equipment in connection with the log conveying apparatus and sparks from railway engines. Of course, scrupulous cleanliness should be observed in the yard to obviate the possibility of an accumulation of bark or refuse.

In a discussion of the hazards of paper mills we should first consider the common hazards of light, heat, and power, which, as perhaps is the case in all classes of risks, are the most frequent causes of fire. Even in such risks as chemical plants we find that common hazards are responsible for more fires than are the special hazards. The special hazards are usually well guarded because they are recognized and appreciated whereas the heating apparatus and the lighting equipment are neglected for no other reason than that they are common and usual hazards. And this seems to apply particularly to paper mills. I have noted in the reports that a recommendation pertaining to defective electrical equipment is found frequently. A possible explanation is that the electrical work is often done under the supervision of the plant engineer who may not be competent to do the work which really requires an electrical contractor familiar with the standards of the electrical code. In the old mills it requires a complete overhaul of the wiring or a new installation to bring the wiring up to standard.

The steam plant is an important point because a suspension of its operations may cause a complete shut down of the plant. The best arrangement, of course, is to have a detached boiler house of fire resistive construction. Lacking such ideal arrangement it is at least possible to effect a standard cut-off between a frame or brick boiler house and the main plant. Whatever the nature of the power, and it is not unusual to find a combination of steam, water and electricity, there is extensive shafting which must be kept in alignment. Bearings, often in inaccessible places, must be well oiled. A competent engineer or superintendent will care for these matters.

Generally speaking the special hazards are not severe. Among the chemicals handled are lime, sulphur and resin. None of these are liable to spontaneous combustion and it is satisfactory if they are stored separately in cool dry places.

The sulphur burning process in the sulphite mill should be in a fire resistive section cut off. Furnaces used in connection with liquor recovery in the pulp mills present only the usual furnace hazards which mean that ample clearance should be maintained from all combustible material.

In the various steamheated processes, such as digesting, size heating, wax melting and the like, no particular hazard is involved and it is only necessary to see that the steam piping is kept free from wood. The pipe should be supported and bushed where passing through wood floors or partitions

In the storage of stock, both raw and finished, it is essential to observe care as to cleanliness. Rags are stored either in warehouses or in the mill yard. Fire once started in the bales is exceedingly difficult to stop. With rags, and particularly with cheap stock, we encounter the marked hazard of spontaneous combustion. In the preparation of rags, their sorting, dusting, and cutting, we have a dust hazard and a marked hazard in the possibility of foreign materials striking a spark in the cutting and picking processes. It is proper to handle all rags in a separate section, fire resistive if possible, but in any event securely cut off. It is needless to say that the rag hazard is much reduced if sprinkler protection is afforded. The dust hazard can be minimized by providing dust collectors.

Where old paper is used for stock, as it is in some mills, especially book mills, the paper warehouse should be detached.

In the paper machine process there is very little hazard. Torn paper accumulates under the machine and at the cutters; this should be cleaned up and removed. It is quite possible that the dust given off at the cutters affords a dust explosion hazard which can be guarded against by adequate ventilators over the machine.

In the barking, log cutting, and chipping processes incidental to the making of pulp there are the usual hazards of handling wood and in addition the hazard, severe in my opinion, of wood dust. Wood dust in a proper mixture of air, is ignitible or explosive, the precautions to be observed are cleanliness and ventilation. The rooms where this dust is prevalent should be cleaned up at least once a day and fans should remove the dust as it is created to prevent its dissemination throughout the building. Care should be exercised to keep the bearings of motors, fans and fast revolving machines clean of dust as over heated bearings are a constant hazard throughout the plant. In the chipper room and in the chip loft there is the marked hazard of handling enormous quantities of wood. These rooms should be fire resistive in construction and equipped with short hose lines so that an incipient fire may be controlled.

Before conclusion let us briefly consider the underwriting factors involved in use and occupancy insurance. The mills operate throughout the year except as they are effected by low water or by labor trouble. Raw stock can be obtained in the market without difficulty, although if pulp had to be carried by rail from any considerable distance it is possible that railroad trouble might be unexpectedly encountered. The large mills as a rule store their pulp and pulp wood in detached piles so that the burning of one pile would not cause a suspension of operations. Processes are not ordinarily duplicate and while the different processes in a well arranged mill are conducted in separate sections well cut off, it is quite possible that the shut down of any one section will materially affect the whole output. The steam plant is an *important* factor but fortunately serious fires in well arranged boiler rooms are not frequent.

The machinery is domestic and not easily susceptible to damage from small fires. The paper machine would require a long time to replace, and damage to it would instantly affect the output, although the pulp department could continue to operate. While it is quite possible that a small fire in a mill could cripple the entire plant, the shut down period would probably be short. The large mills keep parts and supplies on hand and have in their employ competent mechanics. Unless the paper machine is affected the shut down would not be serious or long. We should bear in mind that the power and the special processes are exposed only to moderate hazards. It is always desirable to have a possible outside source of electricity even though electricity be generated on the premises, and this condition usually obtains except where the mill is a remote country risk.

Of a modern mill, well located in respect to obtaining its supply of pulp or pulp wood, it is safe to say that it yields a fair profit to its operators who would exercise diligence and haste in placing the mill in operative condition after a fire, even though they were enjoying the protection of use and occupancy insurance.

It is usual to find the managers and superintendents of the large mills keenly interested in fire preventative measures and the competent engineer, who offers feasible recommendations for improvement of the risk, may reasonably expect that his suggestions will receive favorable consideration.

Exports of Pulp and Paper in April

The following review of Canada's pulp and paper exports is prepared by the statistical department of the Canadian Pulp & Paper Association from figures issued by the Department of Trade & Commerce, Ottawa.

Unless otherwise stated, figures are in short tons.

NEWSPRINT	April		Four Months	
	April		Four Months	
To:	1923	1922	1923	1922
United Kingdom		819	29	3,520
Cuba		51		203
Jamaica			129	109
Argentina		498		1,133
Mexico		—	—	69
Uruguay				92
Other Latin America	73	45	270	110
British S. Africa	368	1,024	1,394	2,426
Australia		2,739	5,163	11,085
New Zealand	984	878	3,673	3,484
U. S. A.	76,854	55,396	348,182	272,747
All Other	99	12	172	100
	78,378	61,462	359,012	295,078

Exports in April were much smaller than in March when the amount was 113,450 tons.

For the first four months of the year, exports were greater than last year by 63,934 tons or nearly 22 per cent.

Exports to U. S. A. in this period increased by 75,435 tons.

Exports to Australia were less than 50 per cent of last year's figures.

MECHANICAL PULP:				
To:	1923	1922	1923	1922
U. S. A.	11,774	6,448	64,540	51,638
U. Kingdom	2,225	—	15,349	14,222
France	1,993	—	1,993	1,943
Belgium	—	—	—	—
	15,992	6,448	81,882	67,803

SULPHITE:

(a) *Bleached:*				
U. S. A.	10,225	6,046	50,064	36,174
Japan	501	2,000	4,117	2,898
All Other	121	103	121	104
	10,847	8,149	54,302	39,176

(b) *Unbleached:*

	April		Four Months	
U. S. A.	11,983	7,148	55,606	35,411
U. Kingdom	1,788		2,910	1,581
Japan	516	1,169	3,591	5,564
France	1,100		4,038	2,014
All Other			—	—
	15,387	8,317	66,145	44,570

SULPHATE KRAFT PULP				
	1923	1922	1923	1922
U. S. A.	9,605	8,162	44,993	43,821
Japan				
	9,605	8,162	44,993	43,821

WRAPPING PAPER KRAFT				
U. Kingdom	322	41	2,501	1,676
South Africa	378	181	729	371
Australia	103	75	1,351	896
New Zealand	21	40	583	367
Japan	593	300	1,312	1,695
U. S. A.				
All Others	12		65	60
	1,429	637	6,646	5,065

	1923 lbs.	1922 lbs.	1923 lbs.	1922 lbs.
BOOK PAPER:				
To:				
U. Kingdom		—	2,000	
S. Africa	—	—	—	
Australia	199,200	2,800	1,165,700	47,200
New Zealand			313,600	66,500
Japan	20,000	—	20,000	—
All Others	4,400	700	47,000	21,400
	223,600	3,500	1,548,300	135,100
BOND & WRITING:				
U. Kingdom	14,300	—	64,900	
S. Africa	2,300	22,600	6,100	32,700
Australia	104,400	13,000	382,900	20,900
New Zealand	15,400	5,600	59,800	9,000
West Indies	—	2,800	4,400	5,700
U. S. A.	—	9,700	20,200	26,000
India		—	81,200	—
Japan	46,200	—	234,100	—
All Other	26,900	2,600	44,900	29,900
	209,500	56,300	898,500	124,200

A Study In Black And White

By FRED BROWN, Fort Frances, Ont.

I am calling again the attention of the public to the fact, that Canada has lost during the last 7 decades 916 million of acres of forests. Part of this 916 million of acres of forest consisted in virgin forest, part of it in second growth, some of this stupendous amount of acreage has been burned over once, some of it twice some has been visited by the Fire Demon as often as 8 times. 95% of all Forest fires are caused by human carelessness. To keep fires out of a forest country is not easy, but after all it is easy enough, simple enough, we **must** at all costs prevent them, if possible, from getting started. This requires primarily a lot of sound publicity, and secondarily, just a little better enforcement of the Law. Law enforcement itself is good publicity. Why? Because the novelty of law enforcement would create a big surprise to the parties most interested in the starting of a fire, and this interest would create more interest, so to speak

Repeat fires are even more dangerous for the public at large and the Dominion and the Province in which they occur, than original primary fires, for the reason that repeat fires are the fires that do more damage than is realized at first calculation. The most simple farmer in the country knows that the richer the land or soil is in humus, in nitrogen and organic matter and etc. the better the chances for a bumper harvest. Unfortunately for agriculture most of the land is limited as to the content of nitrogen, humus, and organic matter, but forest soil in its natural state is not thus limited. Every summer however, fire that runs through the forest just takes a little more humus and organic matter, so that after 3 or 4 fires occurring on the same land the fertility is completely burned out and you have on hand a stretch of land just about as productive as the desert of Sahara.

Canada as a whole, and every Province from Nova Scotia to British Columbia are acquiring a part of the 916 million acres of desert, if the people, the legitimate owners of the forests do not wake up and bestir themselves. What do you suppose our North country is worth in dollars and cents, as a playground to rest in, to hunt in, to fish in, and for general recreation purposes? Who will take chances to pitch his tent in the greens of Northern Ontario, or Northern Quebec, or any other province, and take the risk to find his tent burned up, his hunting ground burned over, his fishing gone, gone with the stream that once supplied the nearby towns and cities with wholesome drinking water. Fur bearing animals will migrate further north, where woods are reasonably fool and boobproof. Ducks and geese will breed and rear their young further North and not even a coyote will remain to howl his mournful song to the moon. Who will pitch his tent amongst a mess of scraggy brush, blackened stumps, ashes and cinders and smoke? How much would our National Railroads gain in Tourist traffic, how much would be spent in automobile traffic how much would come into this fair Dominion of ours? We have the greatest asset in the world to create a Tourist traffic second to none on the North American continent, and yet we are lacking in sufficient appreciation to take proper care of this wonderful asset.

Efficient fire protection has been attained with an annual expenditure of one-half cent an acre. Five cents an acre a year as a tax, to be used in forest protection and fire prevention would have given us during the past seventy years on the 916 million acres of burned over forest land about forty-five million dollars. Could we have protected our forests more efficiently on this sum? Could we not even have replanted some waste lands. I wonder!

While we do spend a lot of money on fighting forest fires, I go on record as saying that we never have had adequate fire protection. Purposely I alluded to the Tourist Bill first, but I cannot pass from this without saying a few words about the gallant fight Spruce and Pines are making to get a footing for a second growth. After the first fire sweeps through a forest, the Pines and Spruce are trying to get back and with half a fair chance a lot of our burned-over country would get back into pulp and log timber in a relatively short time. Along comes a second fire and wipes out the fairly well established second growth, takes along, for a good measure, a few thousand dollars worth of humus and nitrogen forming organic matter and later birch or jackpine trees arise to cover up the depravity of fools and boobs who started the fires and try to cover, alas! not to much purpose, nature's nakedness. To be sure, the sight of straggling jackpines in clusters with large bare spaces between the growing dwarfs with rank weeds and brushes interspersed is not an inspiring sight, and lo! and behold on a fine day in early spring summer or fall, along comes another fire, takes the last remnant of jackpine, grass, brush, humus, organic matter and all and deforms what was once a piece of God's wonderful creation into a barren desolate desert; a crying shame and menace to civilization. A few more years will turn the trick. After two or three years the effects of the denudedness from the covering forest will be noticeable. The surface of the country will become eroded; spring thaws and spring freshets will wash off the unproductive ground and will spread over lower lying fertile fields; streams will become roaring torrents in the spring and after heavy showers, and in summer they will dry up; the farmer on lower lying land, tired of this everlasting gratuitous increase of unproductive soil, gets worn out in the unequal fight between man and nature and abandons his farm and home, soured in mind, broken in spirit—one more recruit in the ranks of the defamers and malcontents.

Having shown how easy it is to deprive the business man of a **real** vacation in the woods and by a real vacation I mean a vacation when the tired business man can rough it to his heart's content and not a summer hotel, a few feet back of a dusty highway, where a lot of college girls dance on the front piazza, a lot of young fops in white flannel pants and canvas shoes swing a tennis racquet on the front steps.

Having also shown how to go about to create abandoned farms and turn their former owners into a floating population, it remains for me to give you a few more facts concerning the future.

In the same ratio as the available timber supply and pulpwood supply in the Republic to the south of us decreases, the stumpage value of timber and pulpwood increases in Canada. This is the law of supply and demand. The Eastern States getting lumber from the Pacific coast pay about as much for freight as for the lumber itself. Good business for the railroads, someone says, but I can assure you, a mighty poor business for the newlyweds, who start out in life and want to build their own nest. All over America we have heard the cry of house shortage and we all are more or less familiar with the results. Everybody is familiar with the rent-boosting, the selling of inferior habitations at exorbitant prices, and the extreme uncertainty of tenure. But what the mass of people do not concede is the fact, that this very same house shortage is responsible for unemployment, illness amongst industrial workers, and a genuine hindrance of real prosperity; the very fact, that the owners of the industries were not able to build adequate houses for their employees, got them at the mercy of the inefficient and the floater.

Perhaps, when the price of inferior lumber rises to $100.00 per 1,000 board feet, and newsprint to about 10 c. a pound the matter of forest protection from fires **may** receive some attention. Perhaps not! the public is in the same position as the coin flapper with his "Heads I win and tails **you** lose". The public always loses and must foot the bills. The public must pay for the cost of the world's war with increased taxation and for everything that goes to make life worth living. The raising of pulpwood and saw timber either by natural seed regeneration or by artificial planting is a long time job; that no amount of urgency, no amount of care, and nursing and no amount of capital can hurry to the age of harvest. What happens between acts, so to speak?

We are using about six times as much wood per year as the annual natural growth increase of our available timber supply is today, barring out destructive fires; so that if we start at once to plant, seed and grow, our supply of pulpwood or saw lumber will be desperately low and far away from the markets. Our supply will be far lower than any government estimate "ever will" put it. Right here I go on record to say, that the government's estimates are from 12 to 18 months behind the amount actually used up or destroyed by fire. Thousands of acres will have fallen victims to the fire demon in 1923 and millions of cords of pulpwood and millions of feet of saw timber will be used up in 1923 before the returns of 1922 are available. In fact, before we can realize on a second growth, the people of Canada will be forced to build thousands of miles of railroads to get timber enough from the north to keep going, and bear in mind, that the timber from the far north will be the most expensive article ever put on the market in a civilized country for two reasons.

Primarily, the timber in the far north is scattered and of an inferior quality, which will make logging operations and manufacturing an exceedingly costly affair.

Secondarily, the transportation charges of the finished product to the centers of consumption will assume gigantic proportions.

Why not shake off that apathy against forest fires, why not insist on a sound forestry policy? This country is governed by the people for the people. Get together and demand from the Government reclamation of the vast idle areas of Ontario, Quebec, New Brunswick and the other Provinces, demand protection for the second growth of timber, demand adequate fire protection and law enforcement. Forget petty politics in the cause of the common weal of Canada.

Demand that a heavy duty be imposed on all unmanufactured pulpwood crossing the line, regardless of original ownership; we may as well reap the benefit of manufacturing our own natural resources in this country into the finished product. During the year 1921 we shipped approximately 1,100,000 cords of pulpwood to the United States at $10.00 a cord. The cost of wood, manufactured into paper of one quality or another brings today on the American market from $50.00 to $75.00. The Dominion of Canada stands a loss of from seventy-five to one hundred and seven million dollars per year; these figures are increasing as the exportation of pulpwood increases. Give your imagination a little leeway and figure what this means in wages lost to Canadian people, therefore lost prosperity; figure out how many new towns of about 2,500 population it means; figure out the lost earnings for our public-owned railroads; figure out how many new freight cars are required to haul supplies to the paper mills and camps and how many cars it takes to take 1,000,000 tons of paper to the market, and figure out what a saving would accrue to our forests, as by manufacturing the paper here in Canada closer utilization of tops and limbs could be insisted upon.

In conclusion a word of explanation is due to the reader about the term of Forester and Forestry. To be sure, some people have in mind, when thinking of a forester, a landscape gardener of some sort, or a man, who grows trees and shrubs for sale, or a man who looks after the management of a small park for some magnate and a similar erroneous conception. Forestry is nothing more or less than a financial undertaking. It must be made to pay to succeed. The forester looks upon his work as the labor of raising a crop of commercial wood products, lumber, pulpwood, poles ties, posts, etc. He also knows the value of forest cover to animals' lives, he appreciates the interest of true sportsmen and tourists, he thanks the Almighty for the health and scenic value to the Dominion of productive woods in contrast to barren lands, but when he figures costs, he figures in board feet or cubic feet and cords, he must show financial benefit to the owners, to the investors and in our case as the people are the owners of most of our forest wealth, as the people are the investors, he must show the public at large that it pays to raise forests, that it pays to keep what we have got, that it pays most of all to protect what we have left. It is up to the people to back him up and see him through in his demands for the adoption of a sound forest policy, for adequate fire protection and for law enforcement.

Let our slogan for 1923 be, Less forest fires and more and better protection.

THE OUTLOOK FOR THE PULP AND PAPER INDUSTRY

By J. N. Stephenson, in *Canadian Chemistry and Metallurgy*

There seem to be three principal phases to the Pulp and Paper Industry in Canada: Paper, Pulp, and Pulpwood. In each case we have to consider the present and the probable future condition of the market, as well as the present and prospective production. The United States is by far our largest customer for newsprint paper and wood pulp, and our only customer for pulpwood. While some newsprint goes to other countries, our principal exports to countries other than the United States comprise book, writing and wrapping papers, consigned principally to Australia, New Zealand, Japan, South Africa and Great Britain. About 80 per cent. of our wood pulp exports for the fiscal year ending March, 1923, went to the United States, about half of the balance went to Great Britain, and the rest to other countries.

Newsprint paper is, and will continue to be, our principal item of export. Its value among the exports of the past twelve months represented more than 50 per cent. of the total value, while for the month of March, with the record shipment of 113,450 tons, the proportion was nearly 60 per cent. Most of this went to the United States. The erection of new complete units and the extension of older mills so as to manufacture their former excess production of pulp into paper indicates a growing belief in and appreciation of the value and wisdom of exporting our products in the finished condition. To do so means the more efficient employment of our water powers, capital investment and population, besides greatly improving our economic position relative to other countries; and this point is emphasized by the fact that during the year 1922-23 the tonnage of paper exported was only 25 per cent. greater than the tonnage of pulp exported, yet the value of the exports of paper was about 90 per cent. greater than the value of the exports of pulp. The relative change in value in passing from pulpwood to wood pulp is even greater than in passing from wood pulp to paper.

The growing appreciation of this last fact, together with the growing conviction that Canada does not possess unlimited supplies of timber, although the Dominion is, fortunately, blessed with large quantities, leads us to assume that there is likelihood of further restrictions on the export of unmanufactured wood from Canada. The Canadian mills undoubtedly need every stick of pulpwood that is growing at the present time, and there is some question as to whether there is enough pulpwood growing now to keep the mills running until such time as belated efforts at reproduction of the forest shall have become effective.

The outlook for this industry, as for others, is very largely dependent upon the relative supply and demand. At the present time there is a very close balance. Mills are running practically at capacity, and general business conditions are such that the volume of advertising both in newspapers and in periodicals warrants a consumption that absorbs the current supply. This situation, of course, puts the paper industry in a very firm statistical position, and the leaders in the industry are exerting themselves in every way to maintain these stable conditions. They are resisting the temptation to increase prices, merely on the strength of the market, and on the other hand, are endeavoring to give the working man the maximum possible return for his labors, without so increasing cost of production as to require a new adjustment of prices; but there are indications that manufacturers will be forced to revise prices this summer. The aim is to furnish the consumer with the goods he requires at such a price as will enable him to buy all that the mill can produce. This, of course, makes for the fullest degree of employment both by the producer of paper and by the consumer of it, and the public benefits by the distribution of the earnings of both parties.

Consumption of printing papers for newspapers and magazines and books has been consistently increasing for some time, and has now reached a record level. This consumption, however, very quickly reflects, and is affected by general business conditions; this may be noticed in the fluctuation of as much as 32 pages in some papers from week to week, and of from 2 to 8 or more pages in daily newspapers, and even more in the Sunday editions.

There has been a distinct migration of the newsprint industry to Canada, with the result that the current production is at the rate of about a million and a quarter tons of newsprint per annum. This will be increased largely during the current year by new machines which are now being installed or under construction, so that by this time next year we shall doubtless see the production of newsprint in Canada exceeding that in the United States, and therefore putting Canada in the position of the world's leader in the production of this most important commodity.

There is also an evident tendency to increase the production of other grades of printing paper, and when the time comes for a further restriction on the export of unmanufactured wood, in fact even without such a move, we are likely to see in Canada the establishment of mills making the finer grades of book papers and involving the production of soda pulp from our large resources in poplar and other suitable wood. This tendency will be affected by any revisions of the U. S. tariff.

The burning question remains, as it has for some time, as to whether the markets will accept all available and prospective production, and whether, in view of forest fires and other destructive agencies, there will be sufficient timber to maintain established and projected mills at maximum capacity. In view of these questions, the leaders of the industry are proceeding cautiously, thankful for the current prosperity in the industry, and trusting that the future will bring no serious setback.

A Christian helps the cause of God not so much by what he says as by what he is.

A sense of duty may not be the highest motive, but the best men are moved by it.

CAPITALIZE OTHER MEN'S BRAINS

By FRANK FARRINGTON

In The Bookseller and Stationer

One of the least successful business men I know is a stationery dealer whose business has practically stood still for the last thirty years, a man who thought when he started in with his own store that he knew enough about business to make a success of it.

He has seen other men start in business at his side, develop into prosperous merchants and rise far beyond him while he has year after year remained on the ragged edge of failure. He is a man who never admitted that any outsider could tell him anything about how to run his store. He knew more about his business than any of these trade paper fellows. You needn't try to tell him that some chap who never saw the inside of his store could tell him what he ought to have in stock. And so on.

The Most Successful Business Man

Probably the most successful business man I ever knew was John H. Patterson, President of the National Cash Register Company, up to his recent removal by death. Mr. Patterson not only knew that outsiders could give him ideas about his business, but he was constantly seeking for ideas and information from outsiders. He was never satisfied with what his own force, even his own experts, could offer in the way of business suggestions. He drew on the outside brains wherever he found them. Each man he met was given an opportunity to show what that particular man knew that Mr. Patterson might learn. Whenever I came in contact with this remarkable executive, even when seated next to him at dinner in his own home, I found that instead of the occasion being an opportunity to learn from Mr. Patterson some of the things I would like to have learned, he wanted to know what I knew that he did not know. It was not that he regarded me as better informed than himself, but he realized, what some of us fail to grasp, that almost anyone, outside of our business, or inside of it, knows something applicable to our business that we do not know. Often the outsider's viewpoint offers something no one inside of the business will ever discover for himself.

Seek for Ideas

If anyone may be considered to have learned his business well enough to be able to manage it without seeking or accepting suggestions from outside, John H. Patterson might be regarded as such a man, but he did not allow himself to fall into that attitude. He sought for outside ideas from men and from business books and trade papers. He knew that men who spent time and effort to work out ideas worth printing have ideas worth consideration. Business literature that had passed through Mr. Patterson's hands showed by the frequent penciled interlinings that he recognized and took note of the ideas that he regarded worth while.

The passing of the three-score-and-ten mark did not lessen Mr. Patterson's desire to learn and I have heard him repeatedly declare that he expected to go to school as long as he lived, meaning that he would continue to learn from whoever had anything worth his learning.

Well, you and I cannot, perhaps, become successful to the extent Mr. Patterson succeeded, but we certainly can take a leaf from his book and determine to learn all we can wherever we can and thus keep on growing in knowledge of business matters as long as we remain in business.

There is a great opportunity for the business man today that did not exist for the business man of twenty-five years ago. There are countless business books adapted to the use of retail stationers and booksellers —and it must be admitted that a good many booksellers are not very well acquainted with the business book market. But, even more important than the business books, are the business periodicals, especially those directly devoted to the business in which we are engaged.

The Trade Paper

The success of a trade paper depends upon its ability to give its subscribers information of value to them in their business. If it cannot help its readers, it cannot retain them as subscribers and it will suspend publication. When a trade paper keeps going and improving and gaining in prosperity, you may be sure it is giving its readers valuable help and that many of them are reading that paper closely. You may not read it. You may think it contains nothing of help to you, because you have not read it to find out, but just as surely as the paper endures, just so surely it is delivering the goods to those who will accept delivery.

The man who subscribes for a trade paper and does not read it throws away his money and in addition he throws away opportunities. Just one good idea passed by may cost the loss of hundreds of dollars. Just one good idea picked out may bring hundreds of dollars. It is always taking a chance to let a number of "The Bookseller & Stationer" or any other good trade paper to go unread. Many a merchant has failed just because he gave his spare time to reading the sensational "extras" of the evening press instead of to reading and studying his trade papers.

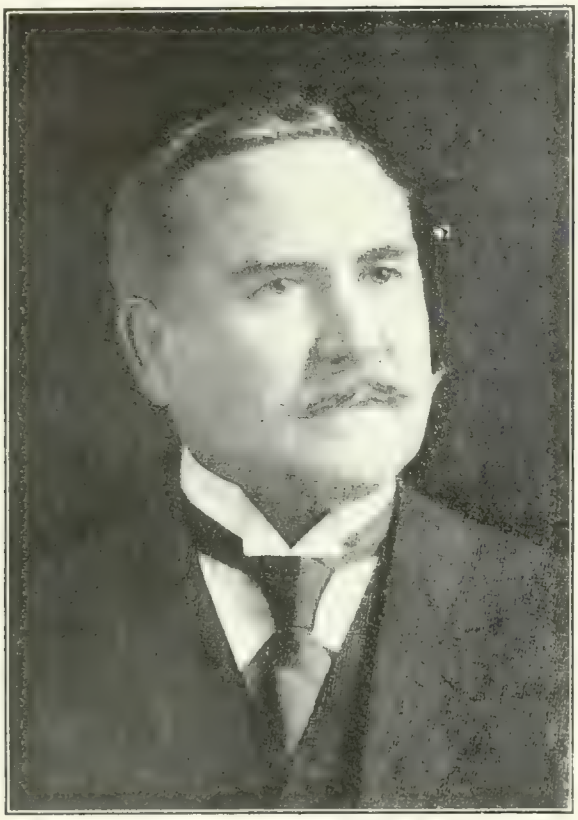
Through some years in the retail handling of books and stationery I found the trade paper the source of ideas and inspiration that were the making of the success of my store. If I have reached a point where I am able to say some things through the trade paper that will help others, it is due to the fact that years ago I discovered that those publications contained just what I needed to enable me get more business myself.

Many of the merchants you have seen achieve success have the trade paper to thank for much of that success. Unfortunately some of those men backslide. They reach a point where they think they know enough about business as if anyone ever did and they cease learning and their business ceases growing. But that is in spite of the trade paper, not on account of it.

Probably no reader of "The Bookseller & Stationer", outside of a few experts, realizes what it costs in time and money to produce the "Record of New Books" which appears in each issue. This Record is taken as matter of course by most subscribers. It offers a service that otherwise could be obtained only at great expense, if at all. It tells the bookseller just about all he needs to know about these books as they appear. And no doubt there are subscribers to the paper who do not use that Record!

It is so with the best features of most trade papers. There are readers, or perhaps I should say "subscribers" who do not realize their value or take advantage of them. As an old trade paper reader, let me warn every dealer not to neglect the careful use of his trade paper. Subscribe for one or more papers whether you read the newspapers and the latest books or not.

If you become as great a success in business as John H. Patterson, you may not then need to follow this course, but if you do become as successful, you will then know too much to neglect the source of even greater success.



MR. H. BIERMANS,
President Belgo-Canadian Paper Co., See page 561.

SPECIAL FAST FREIGHT FOR NEWSPRINT.

Announcement was made yesterday by the Canadian National Railways of the inauguration of a new fast freight service especially for Canadian newsprint, between Montreal and New York. This new service will start on June 1, and is planned to be so speedy that it will be possible for Canadian newsprint to be shipped from such mills as those at Shawinigan Falls and Grand'Mere one day and be turned out from New York printing presses with the latest news three days later.

In inaugurating this fast service for the "paper special" it was stated that the Canadian National Railways are cooperating with the Central Vermont, a subsidiary of the C.N.R. and the New York, New Haven and Hartford Railway. In this way the trains of paper and other fast freight, when necessary, will be made up at the Grand Trunk yards here and hauled by Canadian railways over three quarters of the distance to New York, the New York, New Haven and Hartford getting the shorter end of the haul on the latter part of the run to New York.

This has been arrived at by a working arrangement between the three railways for the fast freigh service, the train running over the Grand Trunk to St. John's, Que., over the Central Vermont to Willimantic, Conn., and thence over the N. Y., N. H. & H. to New York.

It is planned that the "paper special" shall be made up at the Grand Trunk yards daily, so as to pull out about 4 o'clock each afternoon and arrive at New York on the morning of the second day sufficiently early to provide that the paper shall be available for the second morning delivery there, about 8 o'clock, so that if taken direct to the newspaper offices it will be immediately ready for the presses for afternoon editions. This, it was stated, was a speedy delivery not far behind that of the average express despatch.

Arrangements are being made by the Canadian National Railways for a special service from the pulp and paper centres connecting with their lines and feeders. These include the mills at Shawinigan Falls, Grand'Mere, Chicoutimi, Jonquieres and East Angus, in Quebec province; Bathurst, N. B., and Iroquois Falls and Smooth Rock Falls, in Ontario. The newsprint will be brought to Montreal in carload lots and then made up into the "paper special" for its daily run to New York.

It is not expected that there will be sufficient newsprint for export from the Canadian mills to make up a complete trainload every day. In such case it is planned to add sufficient cars of freight needing special despatch to make up a complete train, so that there will be plently of paying goods for the "paper special."

"This is just the kind of speedy service the pulp and paper industry in this country has been looking for, and it will prove most acceptable to both the manufacturers of newsprint in Canada and to the American consumers," said Edward Beck, secretary of the Canadian Pulp and Paper Association.

"Conditions in the paper industry today are such that it is practically impossible for a newsprint mill to accumulate much of a surplus stock. For the same reasons newspaper publishers find that the demand is such that they are unable to get in much advance stocks for their requirements.

"Generally speaking, there is today a smaller accumulated stock of paper either in the warehouses of the publishers or the storehouses of the mills than at any time within recent years. For that reason, if for no others, such a service as that proposed will be appreciated, as it will be of considerable benefit to the producers of newsprint in Canada."

THE WOODLANDS SECTION

A SERIOUS FOREST SITUATION.

The reason that our pulp and paper mills have not as yet felt the actual imminent shortage of the available pulpwood supply is due to the large amount of cutting that has been done in the endeavour to salvage as much as possible of the two hundred million cords of budworm killed wood. However, the present year will probably see the end of the salvage period of this dead wood as it has now largely got beyond a usable condition, and when the operators again look about for a chance to cut in green timber they will then very soon realize that there is an acute shortage in the supply. Notwithstanding this tremendous shrinkage in our standing timber we keep adding to our consumption to such an extent that in a five year period the increase in Canada has amounted to 100%, and at the same time the loss from fire is also increasing from year to year and, as the country becomes drier from lack of forest cover, will continue to increase.

These vital factors are quite overlooked in estimating how long our standing timber will last. It is the common custom to take the amount of the stand and divide it by the amount of the present cut despite the fact that the loses from the above mentioned causes is more than ten times the amount of depletion by the axe, and that consumption is increasing at the alarming rate above noted. When the timber on the steeper mountain slopes which should never be cut and also the inaccessible growth is deducted the available stand of live wood is reduced to a very small quantity. Over and above all this the most serious thought for our consideration is that our watersheds are already over-denuded of forest growth to such an extent that many of our mills have to operate at half capacity or less for four or five months in the year from lack of power, with alarming freshets in the spring, causing untold damage together with severe climatic changes, and an alternating of cold and heat which are disastrous not only to agriculture but to human life as well.

Montreal May 24 1923 Frank J. D. Barnjum.

AMERICANS ANXIOUS OVER POSSIBLE TAX ON PULPWOOD

Cleveland, O., May 24.— "The permanency of the paper industry in the United States is largely dependent upon the protection of our nation's forests, said Dr. Hugh P. Baker, the technical forester who is executive secretary of the American Paper and Pulp Association speaking before the Cost Association of the Paper Industry at the Hotel Cleveland today. "Canada, I am convinced is determined to control the industry on this continent, and already is so nearly in control of the news-print side of the industry that there is talk among our friends across the border of an export duty upon newsprint.

"Canada is a foreign nation, though we speak the same tongue, and we must first of all look to the permanency of the paper industry within our own borders. The solution of our problem is entirely dependent upon our protection of our forests.

"Undoubtedly, the paper industry of the United States faces an increase in the cost of the pulp wood now being imported from Canada through the proposal now being considered in Canada to impose an export tax upon all pulp wood exported to United States mills.

"An export tax upon wood from freehold lands, if not a complete embargo upon wood from those lands, is very imminent.

"Within a year or two Canada will be producing more newsprint than the United States. It is entirely within the bounds of probability for us to look forward to an export tax upon Canadian newsprint as soon as Canada feels that she has that phase of the industry on this continent well within her control. Such a tax has already been suggested in Canada.

"It would appear from reports in trade Journals that the Canadians are now considering following up their successful efforts to control the newsprint industry of the continent by similar campaigns to control other branches of the paper industry.

THE FIRE RANGER SEEKS CO-OPERATION

It is well recognized among those in charge of the work of protecting the forest that one of the greatest aids in attaining that object is the work of the fire rangers in enlisting the sympathy of the travellers, campers, and other temporary residents of the areas to be protected and securing their friendly co-operation, especially in the way of attending to their own camp-fires, etc. This idea is emphasized by the chief fire ranger in charge of one of the vast fire-ranging district of the north. He writes:—"It has been gratifying this fall to receive letters from tourists, prospectors, trappers, and traders, thanking the rangers for courtesies extended to them, also complimenting us on our work. The rangers have certainly been of great service in many ways to the public. The information they give is always reliable."

"I hold, without hesitation, that the potential forest weath in this country should be developed in the light of patriotic commercialism and administered as a trust for the future needs of the country, and that not a single stick of timber should be cut that will create detrimental conditions for those who come after us. Some time or other, we shall be face to face with the problem of whether or not commerce shall be allowed to rob our forest irrespective of future demands. It will come to us just as it has come to China in the past, so that actuated by these conclusions we ought not to waste a single tree from the forests we now have, and we ought to replant and reproduce without stint so as to leave this fundamental resource in undiminished plenitude for the people of a still greater Canada. The sooner we face the bald question, the easier it will be for us to decide. To what extent are we going to permit the forest resources of the country to be commercially exploited and exported for the purposes of selfish gain?"

—Right Honourable Sir George Foster.

FORESTRY ABSTRACTS

B-2 Research Work of the Dominion Forest Service. W. G. WRIGHT. **Can. For. Mag.** XVIII No. 3 (March, 1922, p. 673.—C.L.

B-2 Improvement Cutting on a Commercial Basis at Petawawa Experiment Station. J. C. VENESS. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 724). Describes an interesting experiment by the Dominion Forestry Branch on this area in the white pine region of Ontario. Cutting of poplar and birch was conducted with a view to increasing the productiveness of softwood species; logging slash was lopped and scattered. Periodical observations will be made, to determine results.—C.L.

B-2 Tree-Planting-A Form of Surgical Operation. B. R. MORTON. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 730). Describes precautions that should be taken in setting out trees—C.L.

B-2 Variations in Northern Forest and Their Influence on Management. E. F. MCCARTHY. **J. For** XIX No. 8, (Dec. 1921, p. 867). Compares forest types of the Algoma District of Ontario with those of the Adirondacks, with incidental references to conditions in pulpwood forests in selected regions of Ontario, Quebec and New Brunswick. Emphasizes the need for digesting and correlating existing data, as a basis for the beginning of forest regulation.—C.L.

B-2 A Study of Regeneration on Certain Cut-over Hardwood Lands in Northern Michigan. PROF. P. L. BUTTRICK. **J. For.** XIX No. 8 (Dec. 1921, p. 872). Sprout growth following cutting offers promise of reasonably satisfactory regeneration of the hardwood species, provided fire is kept out. However, the logging slash after seven years is still undecayed or even matted down and remains a serious fire hazard.—C.L.

B-3 Scouting for Fires and Fighting them by Aeroplanes. CAPT. F. C. HIGGINS. **Can. For. Mag.** XVIII No. 4. (April, 1922, p. 738). Record of twelve days operations in Crows' Nest Forest Reserve, Southern Alberta.—C.L.

B-3 Fire Weather Forecasts-A New Feature in Timber Guarding. E. T. ALLEN. **Can. For. Mag.** XVIII, No. 4. (April, 1922. p. 740) —C.L.

B-3 Fighting Insects by Means of Aeroplanes. C. R. NEILLIE and J. R. HOUSER. **Can. For. Mag.** XVIII No. 4. (April, 1922, p. 741). Insecticide was distributed by aeroplane, over a grove of catalpa trees, near Dayton, Ohio, to protect it against destruction from a serious outbreak of the Catalpa Sphinx, a night-flying moth. The poison dust was effective in destroying 99 per cent of the insects. C.L.

B-3 Physical Control of Fires. S. B. SHOW **J. For.** XIX No. 8. Dec. 1921, p. 917). Fires occur much more frequently, and are more serious on south slopes than on others; slopes with a northern exposure are safest from fire. Fires in brush spread more rapidly than in timber.—C.L.

B-3 Forest Fires the Plague of the Fur Trade. Can. For. Mag. XVII, No.2. (Feb. 1922, p. 603),—C.L.

B-3 The Railways and Forest Protection. CLYDE LEAVITT, Chief Fire Inspector, Board of Railway Commissioners for Canada. **Can. For. Mag.** XVII, No. 3 (March, 1922, p. 657). Describes the fire protection work of railways in Canada, under the requirements of the Railway Commission. Excellent co-operation is maintained, and the work is generally very effective. —C.L.

B-3 Protection Methods in Canada's Forest. .PROF. W. N. MILLAR. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 711). The total annual expenditure for forest protection in Canada, by all agencies, is probably not less than $1,500,000. In no case has there as yet been developed a staff capable of making a close scientific study of the problem of fire protection, resolving it into its elements and building up on a basis of known facts a business-like organization and mode of procedure. The importance of forest protection is indicated by the fact that fully 65 per cent of the country is capable of producing no other form of useful commodity. The article discusses desirable means of prevention, detection and suppression of fires, and supervision of forces. For continuation, with full discussion of work in the field, see May and June issues. An exceptionally valuable series of articles—C.L.

B-3 Cleaning up Debris in Pine Forest. ROLAND D. CRAIG. **Can. For. Mag.** XVIII, No. 3, (March 1922, p. 664). Broadcast burning of logging slash is not recommended in the pine type, on account of severe damage to soil and young forest growth. The author recommends the piling and burning of slash as cut: this greatly reduces the fire hazard and greatly facilitates logging operations, particularly skidding—C.L.

B-3 Insect Armies that Follow in the Wake of Fire. J. M. SWAINE. **Can. For. Mag.** XVIII No. 3, (March, 1922, p. 666)—C.L.

B-4 The Woods and Markets of British Columbia. WM. TURNBULL. **Can. For. Mag.** XVIII No. 3 (March, 1922, p. 673) See also April issue, at page 726 for continuation.—C.L.

B-9 Ontario's Forest as a Continuous Crop. HON. E. C. DRURY, **Can. For. Mag.** XVIII, No. 2. (Feb. 1922, p. 605),—C.L.

B-9 Canada Must take Out a Timber Insurance Policy. R. O. SWEEZEY. **Can. For. Mag.** XVIII, No. 2. (Feb. 1922. p. 614),—C.L.

B-9 Sustained Annual Yield as a National Policy of Forestry. PROF. RUSSELL WATSON. **J. For.** XIX, No. 8, (Dec. 1921, p. 817). A discussion in support of Prof. Roth's plan of national regulation of forests in the United States, with a brief exposition of that plan. The main bodies of virgin supplies will be exhausted about 1970. There is a serious deficit in the area of timber stands over 60 years old, which means that there will be a period of extreme shortage of timber of larger sizes, culminating with the comparative exhaustion of virgin supplies about 1970, since after that time supplies must come from second growth. Advocates Federal regulation of cutting on the remaining forests in such a way that neither the area nor the volume will be reduced, that is, in such a way that the cut takes only the growth, so that a continuous supply of timber will be provided. Adequate fire protection will not be obtained on the forest lands now being logged until sustained annual yield of the area (usually not over 90,000, acres in extent) is obtained. Under a sustained annual yield policy a continuous lumbering operation is carried on. On a 90,000 acre tract, cut over on a 20-year return plan, selection system, a lumbering crew could be kept constantly at work-logging, road building and maintenance, sylvical work, planting and fire protection. A crew of forty men could be employed here constantly; and forty men to 90,000 acres would give a pretty good secondary line of defence in fire-fighting. It would just about insure adequate fire protection. The object of the program advocated is to prevent forest devastation and leave a stand of growing timber after logging—C.L.

NO EXPORT ON NEWSPRINT CONTEMPLATED

Commenting on the statement attributed to Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, appearing in a dispatch from Cleveland, O., which set forth the view that Canada is due within a few years to dominate the United States as a paper-producing country. Edward Beck, manager of the Canadian Pulp and Paper Association, says that Dr. Baker, if he is correctly reported, is somewhat more advanced in his views than most of those engaged in the paper industry in Canada.

"Canada," said Mr. Beck," enjoys certain advantages in the possession of cheap pulpwood and of hydro electric power applicable to paper-making which put it in a superior position for the production of newsprint paper. Coupled with a gradual diminution of the commercially available pulpwood in the Eastern United States, these advantages have led to a gradual transfer of the newsprint industry to Canada, which has been accelerated by the application of much American capital to its development. It is probable that within two or three years Canada will be producing more newsprint than the United States, but I doubt that it is within the bounds of probability, as stated in the remarks attributed to Dr. Baker, that this country will ever impose an export tax on newsprint. Such a thing has never been seriously suggested and it would receive scant consideration from anyone, least of all from the government at Ottawa, which is doing all its utmost to promote friendlier trade relations with the United States. Such a tax, were it proposed, would be vigorously fought by the paper-making industry in Canada.

"As to the designs Canada is said in the statement to be harboring to control other branches of the paper-making industry, Dr. Baker is completely misinformed. Taking book paper for an example, the Americans now produce and consume an average of over a million tons of this class of paper a year. Canada produces only about 60,000 tons. We could not, if we would, make any serious inroads in the United States book paper market. As a matter of fact, a greater volume of book and fine papers is imported into Canada than is exported from Canada. Much of the book paper in the United States is made from paper stock in which cheap woodpulp plays but a small part, while the finer grades of bonds and writing papers are made from rags and other materials. In these raw materials Canada enjoys no advantage whatever; in fact, the advantage is with the United States where they are obtainable in greater abundance.

"Dr. Baker is engaged in a laudable campaign on behalf of forest conservation in his country. He naturally put forward the most alarming suggestions as to what may follow if the depletion of pulpwood is allowed to continue without some provision being made for its replacement. That is why Canada is being held up as likely soon to control the paper-making industry of the North American continent to the detriment of the United States. The facts in this respect, however, do not bear out Dr. Baker's contentions."

Mr. E. R. Dalrymple, whose excellent article on the electric steam generators at the Laurentide Company formed one of the features of the last annual number of the Pulp and Paper Magazine, is being married tomorrow to Miss Gladys Lenore Hutchison.

INSTITUTE ITEMS

SPECIAL COURSE OF STUDY FOR PULP & PAPER WORKERS

(From the Kenora, Ont. *Examiner.*)

The Kenora pulp mill employees will be called upon by the Institute of Industrial and Domestic Art's representative, Mr. Piché, of Gardenvale, Quebec, to take up the study of a special course on pulp and paper manufacture. The Keewatin Lumber Company, pulp mill division, intends to give, with the co-operation of members of a local Educational Committee which will soon be organized, a series of lectures to all employees interested. These lectures, to be started next fall, will be given in connection with this special course of study which is based on a set of textbooks which have been written with the co-operation of the best minds in the pulp and paper industry.

Both the Pulp and Paper Association of Canada and United States are behind this idea of giving to the average pulp and paper mill employee the opportunity of getting more information about the industry in which he is engaged.

This set of textbooks, on which the institute's course is based, covers such studies as arithmetic, mathematics, mechanics, physics, chemistry and electricity as a solid and necessary foundation for that part of the course, which goes into detail with respect to process, practice and appliances in all branches of manufacturing pulp and paper.

The Institute of Industrial and Domestic Arts has already organized this special course of study in some of the Ontario, Quebec and Pacific Coast pulp and paper mills, while, on the other hand, the University of Wisconsin have enrolled quite a number of students in the United States mills.

Mr. Piché has just returned from the Pacific Coast where the Powell River, Pacific Mill and Whalen Pulp and Paper mills have been visited. The heads of these different mills were very enthusiastic over the idea of such a special course of study on pulp and paper manufacture. Some sixty ambitious Pacific Coast mill employees have already started on their studies, while, in a near future, quite many others are anticipated, by Mr. Piché, to take up this special course of study.

TROUBLE WITH WIRE SEAM

Editor, Questions and Answers.

Dear Sir. — The trouble is caused by a slackness or slight bagging of the wire behind the seam. This may have been caused by starting the wire too tight, when first put on the machine, or it may have been a faulty seam.

This particular wire will always give trouble now, but to try and improve matters, I would suggest striking out the wire so that the seam lies along the under couch roll, then give it a good firm rub along the seam with a smooth glass bottle. After that I would be inclined to slacken the wire a little before starting up.

When the wire comes off, it would be well to preserve the whole seam, and send it, with sample of the paper showing defect, to the wire maker, and hear what he has to say about it, as the wire won't run the full time in that condition.

When you get this trouble it is always worst on thin papers.

Yours truly,
AN OLD TIMER.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties & Testing of Materials

A-1 E-0 The Properties of Wood in Paper Making. Bjarne Johnsen and H. N. Lee. **Pulp & Paper** 21, 11-4, 135 (Feb. 1, 1923); PAPER MILL 47, No. 4, 10, 12, 46, 50 (Jan. 27, 1923); **Paper Trade J.** 76, No. 5, 53-56 (Feb. 1, 1923); **Paper Industry** 4, 1529-1532 (Feb. 1923); **Paper** 31, No. 15, 11-14 (Jan. 31, 1923). The authors discuss cord measurement density and rate of growth, chemical composition (cellulose content), decay, and seasoning, in their relation to the manufacturing process, more particularly with respect to the sulphite process.—A.P.-C.

A-3 Bean Straw as Raw Material for Paper. H. Postl. **Wochbl. Papierfabr.** 54, 973 (April 7, 1923). It is suggested that those substances in bean straw possessing high fertilizer value be extracted by a mechanical process and that the remaining cellulosic material be used for producing paper and paper board. Bean straw contains 10.00% moisture, 7.04% ash, 6.19% protein, 39.13% crude fiber, and 35.26% nitrogen-free extract. J.L.P.

A-3 Paper from Adansonia Bast Fibers. Anon. Mitt. de. Materialprufungsamtes zu Berlin-Dahlme. **Wochbl. Papierfabr.** 54, 973 (April 7, 1923). Recent tests, confirming earlier ones, have shown that Adansonia properly cooked yields very strong fibers. The average breaking length amounted to approximately 5700 m. and the average folding endurance to approximately 1700. J.L.P.

A-3 Fibers from the Potato Plant for the Manufacture of Paper. Heinrich Eggers and Adolf Burlin. Ger. patent 370,197. **Papierfabr.** 21, (Mar. 25. 1923). The washed and comminuted potato plants are cooked under a 2 to 3 atmospheres pressure in a 2% caustic soda solution. After washing and disintegrating, the resulting mass is bleached in a 4% to 6% chloride of lime solution with continuous agitation. A treatment with sodium bicarbonate solution completes the process. —J.L.P.

A-3 East African Bamboo as a Paper Making Material. BULL. IMP. INST. 20, 458-461 (1922). Bamboo (Arundinaria alpina) from kenya colony had the following composition: moisture 9.5, water-soluble material 3.6, cellulose (in material as received) 47.5, cellulose (on dry basis) 52.5, ash 1.2 Length of ultimate fibers 1.6 to 2.7 mm., mostly 2.0 to 2.6, average 2.3 mm. Cooking on a laboratory scale for 7 hours at 160°C., with 16% of caustic soda (on the weight of the raw material) as a 4% solution gave 40% of a pulp which was not completely broken up in the beater and could not be satisfactorily bleached. Using 20% of caustic soda under the same conditions gave 34% of a pulp of good felting qualities which could be readily broken up and furnished a pale brown paper of good strength. The pulp bleached readily (bleach consumption equal to that of soda wood pulp) (31% yield on the raw material) giving a white paper of good quality. About 1.5 tons of bamboo were heated for 12 hours with an extra strong caustic soda solution (without removing the nodes) and furnished a pulp which bleached satisfactorily and yielded white paper of good quality. The yield of sized and loaded paper was 41.23% on the weight of bamboo. The paper was somewhat soft, but could have been improved by longer beating. Better results would be obtained by selecting the stems and keeping those of different ages separate from one another.—A.P.-C.

A-4 E-1 Determining the Degree of Disintegration (Digestion) of Pulp. Helmer Roschier. **Pappers och Travarutid. Fur Finland,** No.7 (April 15, 1922); **Pulp & Paper** 21, 35-36 (Jan. 11, 1923); 20, 2023 (Dec. 21, 1922); **Paper Trade J.** 76, No. 5, 60, (Feb. 1, 1923). A.P.-C.

A-12 Quantitative Determination of Adhesive Colloids in Glue. Franz Lorenz. **Papierfabr.** 21, 105,-110 (Feb. 25, 1923). Full directions are given for the following methods for testing glue: moisture, ash, acid content, foreign substances, and adhesive colloids. The last one is carried out according to the Wislicenus absorption method. The apparatus is sketched and a detailed description is given of the procedure. References are made to the following tests: viscosity, melting point of the jelly, degree of swelling, solubility, tensile strength, and binding power.—J.L.P.

E-2 Determination of Sugar in Waste Sulphite Liquor. M. Kleinstuck. **Zellstoff U. Papier** 3, 51 (Mar. 1923). The method of Glassmann, employed for determining hexoses and pentoses, is modified in that the mercury freed by the sugars is allowed to react with iodine solution in the cold; the excess iodine is titrated with thio-sulphate solution. The procedure is given in detail.—J.L.P.

D — Mechanical Pulp Manufacture

D-4 Influence of the Grinding Temperature on the Properties of Groundwood. Johannes Teicher. **Papierfabr.** 21, 153-158; 165-168 (March 18, 25, 1923). Fresh water was used in all the grinding tests. Experiments were carried out at 18, 25, 33, 40, 46, 57, 60 and 64°C. Raising the grinding temperature refines the product until 57° is reached, at which point the stock dilution is 1:30.8. A miscroscopical investigation at 57° showed the presence of many individual fibers together with small amounts of mucilaginous substances. The breaking length of hand-made paper made from groundwood produced at 18° was 2359 m.; at 57°, it increased to 3856 m.; at 64°, there was a decrease to 3002 m. The grinding at different temperatures had no effect on the rosin and fat content of the groundwood.—J.L.P.

D-4 Quick-Acting Automatic Grinder Regulator. A. Sylvestre. Papeterie 44, 1058-1062 (Dec. 10, 1922). A description of the regulator (for motor-driven grinders) of the Compagnie Electro-Mécanique, which consists of a value for regulating the hydraulic pressure of pistons in the pockets, said valve being operated by a rotary magnet by means of an eccentric. The magnet is operated by means of a Brown quick-acting regulator, which, in this case, is concentrated like a wattmeter, its action depending on a change in the current and voltage of the motor. The regulator and magnet are in equilibrium as long as the motor works under a given (and adjustable) load. As soon as the latter changes, the regulator comes into play, and with it the magnet, which operates the hydraulic pressure valve to restore the load to its former value. The regulator can be adjusted for any given power consumption of the motor within limits of 30 to 100% by means of a screw which changes the torsion of a spiral spring in the regulator. —A.P.-C.

D-4 Device for Regulating the Water Pressure in Wood Grinders. George Nenzel. Ger. patent 368,785 **Papierfabr.** 21, 116-117 (Feb. 25, 1923). Water pressure is produced by a pump, the operation of which depends upon the load on the motor.—J.L.P.

D-4 Stone for Wood Grinders. Hermann Hustedt. Ger. patent 364,490. **Wochbl. Papierfabr.** 54, 617 (Mar. 3, 1923). The surface of the stone is grooved so as to produce blunt teeth.—J.L.P.

D-4 Regulator for Motor Driven Grinders. C. A. Boddie, assignor to Canadian Westinghouse Co., Can. patent 227,304 and 227,305, Dec. 19, 1922. The grinder is preferably driven by a three-phase motor, and a load is applied to the grinder by a hydraulic system. The hydraulic pressure is controlled by a main valve which in turn is controlled by an auxiliary valve. The latter is operated by the regulator, which comprises an operating lever connected to the auxiliary valve and an electromagnet connected to the operating lever. A hydraulically operated reactance device changes the setting of the device and prevents hunting action. Comprises two pistons operating in separate cylinders and suitably connected together. One cylinder is supplied with fluid pressure to operate its piston in accordance with the operation of the main valve; and the second similarly operates with the auxiliary valve. The second cylinder is connected to the operating arm of the regulator for so changing the setting of the regulator as to prevent hunting action.—A.P.-C.

D-4 Method of Mounting Grinding Stones. W. H. Sumbling. Can. patent 228,534, Feb. 2, 1923. The end of the shaft is provided with a circular reduced bearing end, which terminates at its inner end at an annular shoulder formed in the shaft. Opposite sides of the shoulder are cut away longitudinally to the shaft to form two parallel flat faces outside of the shoulder. An inner circular bored flange is mounted on the reduced end and has its inner end cut transversely with the parallel faces of the shoulder so that the flange will positively turn with the shaft. The stone is mounted on the reduced end, and means are provided at the outer portion of the reduced end to clamp the stone firmly in position, thus holding the flange against the shoulder.—A.P.-C.

D-0 E-0 F-0 Utilization of Decayed, Insect-Killed, or other Inferior Wood in the Manufacture of Pulp. John S. Bates. **Pulp & Paper,** 21, 77-80 (Jan. 25, 1923). After reviewing information on this subject published recently on this continent, the author concludes as follows: In groundwood manufacture decayed wood gives a medium to high yield, but the quality of the product is poor. This method of utilization should be discouraged except for low grades and, where necessary, for ordinary grades (newsprint) in proportions up to 5 or 10%. Long storage of infected groundwood should be avoided. The sulphite process gives a comparatively high yield and the quality is fairly good. This process is suitable for the production of low and medium grades (including newsprint sulphite. The soda process gives a rather low yield and only fair quality. The kraft process gives a medium yield and the quality of the pulp is fairly good. This process has a wider application than any of the others and the results with decayed wood may be considered favorable when the proportion is not too high. Sorting decayed wood in order to cook it separately in any of the processes would probably allow slightly higher yields and better results; but this procedure is not always feasible. In many cases good results are being obtained by feeding decayed wood in moderate proportions into the pulp mill uniformly with the sound wood. The same considerations hold true for finished pulp.—A.P.-C.

G — Treatment of Pulp

G-11 Fiber Recovery from the Back-Water of Paper Mills. Victor Antoine. Ger. patent 361.189 **Wochbl. Papierfabr.** 54, 322 (Feb. 3, 1923). The back-water is conducted through two lines; the fibers suspended in the main line are collected in a mechanical screen, the fibrous suspension in the other is used again in the manufacturing process.—J.L.P.

G-11 The Waste Water Question in the Pulp, Paper and Board Industries from a Hygienic and an Economical Standpoint. A. Pritzkow. **Zellstoff U. Papier** 3, 30-37 (Feb. 1923). A very general and thorough discussion of the waste water problem covering all phases of the industry.—J.L.P.

G-11 K-13 Reclaiming Stock in Paper Mills. George D. Bearce. **Paper Trade J.** 76, No. 9, 52-53 (March 1, 1923); **Paper Mill** 47, No. 9, 10-12 (March 3, 1923), **Paper** 31, No. 20, 17-18 (March 7, 1923); **Paper Ind.** 4, 1703-1704 (March 1923). A discussion of the importance of preventing fiber losses in mill effluent and of the re-use of white water and of various types of savealls.—A.P.-C.

K — Paper Making

K-4 Process for the Treatment of old Paper, Pulp, Groundwood, or other Material Serving for the Manufacture of Paper. George Kolb. Ger. patent 370,047. **Papierfabr.** 21, 172-173 (Mar. 25, 1923). The fibrous material is suspended in water in an upright circulation tank. This is provided with a central tube to which one or more pipes are connected which discharge into lower part of the tank. A pump or other propelling device circulates the fibrous suspension through the arrangement.—J.L.P.

K-12 Modern long and Cylindrical Board Machines. Eng. Hoyer. **Papierfabr.** 21, 61-63 (Feb. 4, 1923). An account of the recent development of these machines with descriptions of four modern German ones.—J.L.P.

K-12 Modern long and Cylinder Cardboard and Pasteboard Machines. Eng. Hoyer, **Papierfabr.** 21, 33 (Jan. 21, 1923). An account of the development of these machines.—J.L.P.

TECHNICAL SECTION SUMMER MEETING

Plans are almost complete for the Summer Meeting of the Technical Section, to be held June 21 and 22 in and around Montreal. The committee is arranging a corking good program. Particulars next week.

P. S. It will be perfectly proper to bring the ladies.

EXPORTS OF PULP AND PAPER
APRIL — 1923

A report issued by the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for the month of April. The total value of these exports last month was $9,397,472 an increase of $2,907,113 over the corresponding month in 1922.

Details for April are as follows:

	April 1922		April 1923	
PAPER:	cwts	Value	cwts	Value
Newsprint	1,229,046	$4,371,961	1,567,561	$5,866,001
Book Paper	35	560	2,236	16,517
Other Paper & Mnfrs	—	319,542	—	563,692
		$4,692,063		$6,446,210
PULP:				
Sulphate	163,248	511,615	192,099	618,025
Sulphite Bleached	162,982	654,903	216,942	975,267
Sulphite Unbleached	166,346	452,564	307,727	845,852
Mechanical	128,957	179,214	319,834	512,118
	621,533	1,798,296	1,036,602	2,951,262

It will be seen that in every case, exports were greater than in April 1922. Newsprint exports were greater by 338,515 cwts exports of pulp were larger by over 50 per cent, the increases being particularly large in the case of mechanical and unbleached sulphite.

The principal countries of destination of these exports in April 1923 were:

	Paper	Pulp	Total
U. S. A.	$5,950	$2,623,496	$8,574,446
U. Kingdom	104,949	148,591	253,540
All Others	390,311	179,175	569,486
	$6,446,210	$2,951,262	$9,397,472

Exports of pulpwood in April amounted to 74,438 cords valued at $650,176 compared with exports in April 1922 of 49,076 cords valued at $476,344.

As April is the first month in the fiscal year no cumulative comparison can be made but a comparison for the first four months of the calendar year will be of some interest. For the four months from January 1st to April 30th. Canadian, the principal exports of pulp and paper have been as under:

	4 months 1922		4 months 1923	
PAPER:	Tons	Value	Tons	Value
Newsprint	295,078	$21,171,685	359,012	$26,970,734
Book Paper (cwts)	1,351	12,308	15,483	101,151
Wrapping (Kraft)	5,066	786,205	6,646	1,015,899
Total Paper		23,129,146		29,625,341
PULP:				
Sulphate	43,821	$ 2,714,569	44,992	$ 2,916,554
Sulphite Bleached	39,176	3,404,241	54,302	4,804,692
Sulphite Unbleached	44,570	2,507,552	66,143	2,521,468
Mechanical	67,803	2,287,871	81,882	3,763,584
Total	195,370	$10,914,233	247,319	$14,006,298

Our exports of newsprint for the first four months of the current year were greater than in 1922 by 63,924 tons or nearly 22 per cent; our pulp exports were greater by 51,949 tons or 26 per cent. Exports of newsprint to the U. S. A. for this period amounted to 348,182 tons compared with 272,747 tons in the corresponding period of 1922.

TECHNICAL ASSOCIATION PLANS FOR 1923

While the program in detail of the work of the Technical Association for the year has not been fully developed, in almost all lines its activities can be given.

The general standing committees covering the manufacturing processes, mechanical, sulphite, sulphate and soda pulps, will continue their investigation of proposed modifications and the use of newly developed apparatus, at the same time fostering improvements in efficiency and the establishment of standards of practice.

Coated and Processed Papers

It is planned to give some definite attention to problems of gummed and waxed papers. The plans include the formation of a sub-committee dealing with each of these products.

Vocational Education

The preparation of the textbooks on the Manufacture of Pulp and Paper is expected to be completed during the year. The committee will continue to foster the development of vocational education in the mills and in paper making centers through instruction classes, correspondence courses and foremanship training conferences.

Paper Testing

The committee will direct its attention to methods of testing papers for special purposes as well as continuing its efforts towards improving existing methods. The work on standardization of methods of micro-analysis of paper will also be continued.

Standard Methods of Testing Materials

The committee plans to arrange for publication of the methods that have been approved, with a list of equipment for a mill laboratory, and continuing the preparation of methods for approval.

Paper Drying

An active sub-committee has formulated two paper drying codes, one in considerable detail of special value in conducting an exhaustive test, and the other for daily operating records. Several mills have arranged to co-operate in furnishing records for tabulation and exchange of results among themselves through the committee.

Cellulose

Contact has been established with the Cellulose Section of the American Chemical Society whereby the study of cellulose in its particular relation to pulp and paper will be handled by the Cellulose Committee.

Waste

White water losses and the utilization of barking drum refuse as fuel will be continued by the committee, the work to consist of mill tests on white water and evaporative tests on bark in a number of co-operating mills.

Heat losses throughout the pulp and paper making processes and the handling of materials of all kinds are proposed as two subjects providing a large field for investigation. The problem of heat losses includes the economical utilization of all steam, hot water, etc., and will cover every department of the mill. An investigation of the subject of handling materials will include the best practices in various pulp and paper mills under varying conditions.

The Waste Committee has arranged with the Forest Products Laboratory, the News Print Service Bureau and the Woodlands Section of the Canadian Pulp and Paper Association in a study of the utilization of decayed pulpwood resulting from the attacks of insects and fungi in eastern United States and Canada, which is regarded as the most serious raw material problem confronting a large proportion of the industry.

PULP AND PAPER NEWS

Howard A. Casey, of the Chemical Manufacturing Company, Holyoke, Mass., manufacturers of bonds, ledger papers and specialties, was a business visitor in Toronto last week.

A caller on the Toronto paper trade last week was S. C. Knode, Vice-President of the Albermarke Paper Manufacturing Co., Richmond, Va., manufacturers of blotting papers.

The death took place a few days ago at Dundas, Ont., of Edwin Fisher, President of John Fisher & Son, Limited, wrapping paper manufacturers, Dundas. Deceased was widely known in the paper trade in Ontario and his death will be regretted by many friends in the business world.

W. H. Lytle, for many years with the old Buntin-Reid Company, paper jobbers, Toronto, has gone into business for himself as an accountant and auditor and has opened an office in the Page Building in Toronto.

R. I. Finlay and Leo Smith of the United Paper Mills, Limited, Spadina Avenue, Toronto, have returned from an automobile trip in Eastern Ontario where they called on the paper trade. They report business conditions on the whole as being quite promising, although somewhat quiet for the moment.

The annual meeting of the Ritchie & Ramsay Company Limited, whose coated paper mill is at New Toronto, was held in Toronto last week, when the annual statement presented indicated a satisfactory year's business, with a bright outlook for the future. A. V Ritchie was elected President: C. N. Ramsay Vice-President: J. N. Finlay, Secretary-Treasurer and George W. Pauline, Managing Director.

R. A. Brown, of the Canadian Nashua Paper Company, Peterboro, of which he is manager, was a business visitor in Toronto last week. He reports a fairly active market for the company's product, that of waxed and gummed paper.

H. B. Donovan, of the Canada Paper Company, Toronto, is spending a week in Worcester, Mass.

In a telegram to Hon. James Murdock, Minister of Labor at Ottawa, the Powell River Company of British Columbia deny that it discharged all officials of the papermaking union. A report that the company had notified members of the union that they must either surrender their union charter or be discharged gave rise to a debate in the House of Commons last week. The company states that it discharged five men for incompetence and disloyalty.

The Canadian paper trade were interested last week in the decision of Mr. Justice Rose which held that job printing plants are exempt from the sales tax. According to the judgment Canadian job printing plants and newspapers who do job printing do not have to pay sales tax to the Government, and may be classed as retailers when they sell exclusively retail goods made to the order of each individual customer under regulations of the Minister of Customs and Excise. The decision was given in an action brought by the Attorney-General of Canada against Crain Printers, Limited, Ottawa, for the collection of over a thousand dollars alleged to be due in back sales taxes. It is stated that an appeal will be entered.

BELGO-CANADIAN FINANCING PLANS

Toronto, May 28. — Following close upon the transfer to Canada of control of the Belgo Paper Company with the formation of a new company known as the Belgo-Canadian Paper Company, Ltd., comes official announcement of new financing that is being handled by Wood Gundy and Company, and Newman Sweezey and Company, the latter of Montreal. This financing will consist of the issue of $8,000,000 first mortgage 20-year six per cent bonds and $4,000,000 7 per cent cumulative preferred stock. Offering of the $8,000,000 first mortgage bonds expected very soon and further details will then be available.

It was announced today also that Mr. H. Biermans will be president of the new company. Mr. Biermans was vice-president and general manager of the Belgo Paper Company and has been associated with that company and its predecessors for 23 years.

Of late rumors of a pending amalgamation of several newsprint companies in the Three Rivers District have been current and the names of the Belgo Paper Company, the St. Maurice Paper Company, Wayagamack, Saguenay and Laurentide have been mentioned in this connection. Officials have denied that a subsidiary of theirs is concerned in such negotiations and a similar denial was made by the St. Maurice Paper Co. In quarters in close touch with this new financing of the Belgo Canadian Paper Co., these rumors of amalgamations are not taken very seriously. Any steps in this direction are thought to be matters for future consideration.

TECHNICAL SECTION SUMMER MEETING

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PAPER CLUB OFFICERS RE-ELECTED

The second annual meeting of the Montreal Paper Club, held on May 22, at the Queen's Hotel, was characterized by some plain speaking as to the lack of support by the principals and salesmen of the paper and allied industries. The club has done some good work, and has organised very interesting programs and talks on subjects connected with the paper trade, but it has to be admitted that, with few exceptions, the attendance has been disappointing. The reason for this is difficult to say, but the fact remains that the salesmen have not taken advantage of these opportunities to learn something from the other fellow.

Mr. R. M. MacLean, who presided, pointed out that during the past season the club had arranged programs which included talks on paper manufacture, salesmanship, the paper industry, export possibilities, advertising in relation to paper selling, with pictures of paper manufacturing. During the summer a picnic was held at the Beauharnois Mills of the Howard Smith Paper Mills, Ltd. The objects of the club were to disseminate information of value to salesmen and also to bring salesmen together in a social way—in fact, to promote trade and the interests of the paper trade in general. A great deal of work in this way had been done, but he regretted that the principals of the industry had not shown a sufficient interest, nor had the salesmen been alive to the opportunities which were presented. The Pulp and Paper Association, and the Pulp and Paper Magazine had given them every support.

A long discussion as to the reasons for this general lack of interest followed, the speakers including Messrs. J. Home, E. T. Reynolds, F. C. Connolly, and Hamilton. Mr. Home suggested that there was a lack of confidence between the salesmen. There was no cause for this feeling. There were many reports of firms cutting prices, but investigation generally proved that there was no foundation for these reports. He believed that salesmen would derive great advantage by discussing their various problems at meetings of the club, because every man, no matter how long his experience, was able to learn something from others in the same line of business. Such a club could be useful in promoting new methods of selling, of finding new sources of business, and of throwing light on the problems which were constantly coming up.

The chairman invited suggestions how they might make the meetings more attractive, and it was suggested that occasional talk on such subjects as credits and the volume of business in relation to profit might be discussed.

On the motion of Mr. Reynolds, seconded by Mr. Gauthier, it was decided that the present officers and executives continue for another month, and that in the meantime, they consider the policy of obtaining the support of the principals of the trade, the possibility of adding to the membership, and means of submitting, if possible, programs, which would result in a more lively interest being taken in the club.

ELECTRIFYING NEW BRUNSWICK

The development of hydro-electric energy in the province of New Brunswick, will prove of inestimable benefit to pulp and paper interests of the province. Reduction in costs of operation with consequent effect on the overhead expenses is expected to be the chief boon as far as the pulp and paper interests are concerned. The provincial government has established on the Musquash River at Musquash Falls, a hydro-electric development station, which is expected to cope with the power needs of the lower section of New Brunswick. In this territory are now two pulp mills and a new paper mill and a new pulp mill in prospect. The Nashwaak Pulp and Paper Company, Limited, own and operate a pulp mill at Fairville, a suburb of St. John, this mill being located on the brink of the Reversible Falls at the mouth of the St. John River. The St. George Pulp and Paper Company, Limited, own and operate a pulp mill at St. George, which is one of the oldest pulp mills in Canada. The Fairville mill is also long established having been founded by the Cushing interests, being later taken over by the Partington Pulp and Paper Company and dominated by English capital. Some years ago, the Nashwaak Pulp and Paper Company secured control of the Fairville mill and vast pulpwood lands in central New Brunswick along the Nashwaak River. Extensions have been recently made to the Fairville mill, which increased the capacity one third. Increased water supply has been arranged by the construction of a water main from the Spruce Lake service main, a newly constructed main.

At St. Stephen, Hollingsworth and Whitney, of Boston, will build a pulp mill and also possibly a paper mill. This project has been assured by the purchase of large tracts of land by agents for this firm. After looking over various sites the agents settled on St. Stephen, as an ideal site for the Hollingsworth and Whitney industries. These mills will be within the service zone of the Musquash hydro station, and the phase was one of the attractive features.

At Great Falls on the Nepisiguit River, in northeastern New Brunswick, is a hydro station erected under the supervision of the province and is under the control of the New Brunswick Electric Power Commission, but owned and operated by private interests. At Bathurst, N.B., which is but a few miles from the Great Falls hydro station are the three saw mills, the large pulp mill and the new large paper mill of the Bathurst Company, Limited. The pulp mill, has been enlarged recently until it is now one of the largest pulp mills in Canada. The extension increased the capacity one third.

The announcement that the New Brunswick government will develop the hydro-electric possibilities at Grand Falls, has been followed by reports of investigations regarding available sites for pulp and paper mills within the distribution zone of such a station. The station to be constructed at Grand Falls will be probably the biggest in the province with a corresponding volume of power. The prospects are for more power at Grand Falls than at any of the New Brunswick hydro stations. The International Paper Company has mills at Van Buren, Me., and could get power from this station.

English interests are said to be negotiating for a site near Grand Falls on which to erect a paper mill. They have been attracted by the opportunity to secure cheap power, one of the alluring features dilated on at length by the advocates of hydro-electric development being that such power is much cheaper than steam power. The Fraser Companies, Limited, which now own and operate a pulp mill at Edmunston on the upper St. John River above Grand Falls and within the distributing zone of the Grand Falls station, have been contemplating the construction of a mill at the mouth of the Tobique River, as it empties into the St. John River. This site would be within the distributing zone of the Grand Falls hydro station.

The comparison between electric power and steam power is to receive ample exemplification in New Brunswick.

"The poorest possible use for a man's brains is to think for ever about himself."

The man who is willing to only have a little religion might as well not have any.

UNITED STATES NOTES

The Chemical Paper Manufacturing Company has increased its capital stock from $2,000,000 to $2,500,000 by the issuance of 5,000 additional shares of first preferred stock of $100 par value. The authorized capital stock will now be represented by 10,000 shares of first preferred, 5,000 shares of second preferred and 10,000 shares on common, all $100 par.

The sessions of the convention held a week ago by the Northwest Division of the American Pulp and Paper Mill Superintendents' Association at Wisconsin Rapids, draw an attendance of nearly two hundred superintendents, mill managers and owners, technical men and cost men. Without a question the meeting proved the most successful one ever held by this division. There were two business meetings, one at Wisconsin Rapids and the other at Biron. At the latter, papers read by mill superintendents, technical men and others brought out an interesting discussion. The meetings were topped with a banquet served in the Port Edwards Hotel. The delegates and other visitors made inspection tours of mills at Plover, Stevens Point, Wisconsin Rapids, Biron, Nekoosa and Port Edwards. Delegates to the international convention at Springfield, Mass., were given their instructions in resolutions adopted at the Biron meeting. Resolutions expressing appreciation for the courtesies extended by the paper mill owners of Wisconsin Rapids and vicinity were also adopted at this meeting. It is probable the next meeting will be held in Appleton late in October or early in November. A committee to arrange for it was appointed.

The Michigan division of the Superintendents' Association held a meeting May 17 at the Park American Hotel, Kalamazoo, Mich. Some time was devoted at this meeting to consideration of the division's participation in the international gathering being held this week at Springfield, Mass. Following the dinner there were addresses by H. J. Gephardt, president of the H. J. Gephardt Company, Chicago, whose subject was "Steam Losses by Condensation in Cylinders and General Applications, and by J. R. Watson, Engineer of the Gephardt Company, who discussed "Synchronous Motors, Their Control and General Application." Mr. Gephardt pointed out the economical results obtained through use of the Prosser engine. Both addresses were illustrated with a series of comprehensive lantern slides.

A new style sanitary food container which is very much in demand is the Angel positive seal container manufactured by the Angel International Corporation, New York City. This new style liquid container is as feasible as it is efficient. It is made of waxed paper and has a positive seal. This means that once the liquid product has been enclosed by the distributor and the container closed, it remains immune to the contact of germs until it is opened and used by the consumer. The makers of this sanitary container also manufacture machinery for its production. Just now the company is making a drive for a nation-wide use of the product as a substitute for bottles in the distribution of countless liquid products.

With an announcement last week that Chester A. Lyman, sales manager and vice-president of the International Paper Company, will retire from active business, came the statement issued from the International's executive offices in New York, that J. L. Fearing, who has been in charge of the Western sales force will take Mr. Lyman's place in New York. The latter will continue as vice-president of the corporation. Mr. Fearing has been connected with the International Paper Company like Mr. Lyman for a great many years, both having started out with W. H. Parsons & Co., in the late nineties.

For the ensuing half year, the International Paper Company has announced $75 a ton as the contract price for standard newsprint paper from regular newsprint mills. This represents no change from the price in force during the first half of the year. It is understood that present costs of producing paper warrant an advance in prices, but the opinion is expressed that the biggest factors in the production of newsprint are endeavoring to hold prices down to as low a level as possible and do not care to witness a repetition of the runaway markets witnessed in the inflation period of a few years ago.

Burke M. Baxter and Emory C. Prior of Cleveland, O., and Nathan C. Post of Grand Rapids, Mich., are named as incorporators of the Plainfield Paper Company, Chilsdale, Mich., in papers filed with the Michigan Secretary of State. This company, capitalized at $150,000, will engage in the manufacture and sale of paper.

The business of the Thilmany Pulp and Paper Company, Kaukauna, Wis., has been taken over by the American Lakes Pulp and Paper Company which was recently organized and chartered as a Delaware Corporation. The new company has purchased a four-story brick factory building at Waukegan, Ill., for approximately $150,000 and the machinery in the Thilmany company's bag mill at Kaukauna now is being moved to the Illinois city. The transfer will be completed early in June and manufacture of bags in the new location will probably be started in a month. Officers of the new company are: M. A. Wertheimer, president; K. E. Stansbury, vice-president; C. W. Stribey, treasurer; G. J. Stansbury, secretary. C. C. Hockley, Appleton, will be manager of the new plant. Most of the members of the Thilmany company's organization at Kaukauna will be transferred to the Illinois city.

The University of Michigan, in an announcement of the courses in chemical engineering, includes specialized courses in pulp and paper manufacture for graduate students. The pulp and paper group of graduate courses will contain options from the undergraduate course in pulp and paper manufacture and the courses in chemical engineering machinery. The department of chemical engineering has at its head Prof. A. H. White, with whom is associated R. A. Hayward, formerly assistant manager of the Newton Falls Paper Company.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 29. — Generally speaking, the local paper trade is dull. It has been a week of slow business. Some jobbers point out that the tendency is towards small orders, so far as value is concerned, and more of them. This entails an increased overhead, and of course a cutting of profits. Indeed some orders are of such small monetary value as to involve a loss, when all the necessary charges are reckoned up. It has been urged that salesmen can remedy this condition to a certain extent by tactful suggestion and by inquiries which may lead to the inclusion of other lines in the orders.

Taking a wider view of the commercial situation, business is on a fairly good basis. In April both general imports and exports showed considerable increases. The imports totalled $68,181,320 as against $47,695,454 in the corresponding month in 1922. Exports were valued at $53,642,251 compared with $31,917,500 in April 1922. Both the United Kingdom and the United States were larger buyers of Canadian products during the past month.

There are reports of possible developments in the pulp and paper industry of the Province of Quebec, backed in one instance at least by British capital. If they materialize they will add considerably to the production of the Province. But much will depend upon the investigations which are now being made. The industry will undoubtedly expand, but it is far better that the expansion should be of comparatively slow growth, meeting the natural demands for the production, rather than a substantial addition to the output for which it may be difficult to find an immediate market.

Reports of a pending amalgamation of the St. Maurice Valley companies continue to be published. Nothing official has been given out, but apparently certain negotiations are going on, which may lead to a consolidation of a number of Companies or may result in nothing tangible. The main reasons given for such an amalgamation is the saving of overhead expenses by concentrating the management, the pooling of resources, and generally a more economic administration.

In the newsprint section, the most important feature is the announcement of the International Paper Co. that the contract price for standard newsprint for the last half of the present year, will remain at $75.00 a ton. This will, no doubt, set the price for the other companies. For some time there have been reports that the price might be raised to $80.00 per ton in view of the fact that wages and other costs have risen. So far as the Canadian mills are concerned, the general opinion has been in favor of keeping the price at $75.00, on the ground that any increase would upset the market, and would probably result in the curtailing of the demand. In the opinion of the majority of those at the head of the Canadian mills, it is a better policy to have a stabilised market rather than changes in prices which will introduce a disturbing element into the general situation. The announcement by the International Paper Co. is rather out of line with a previous statement of Mr. Dodge, president of the company, who, some time ago, intimated that the price of his company's paper might be advanced to $80.00.

As is well known, Mr. Dodge is in favor of protection for the United States newsprint, and in the absence of that, looks forward to further developments which will give Canada a still greater share of the newsprint industry of the world at the expense of the United States. In this connection, the remarks of Dr. Hugh P. Baker, the secretary of the American Paper & Pulp Association, at Cleveland, Ohio, on May 24 are of interest. He stated that the cost of paper in the United States would increase, owing to higher prices for Canadian pulpwood. He added: "An export tax upon wood from freehold lands, if not a complete embargo upon wood from those lands, is very imminent. Within a year or two Canada will be producing more newsprint than the United States. It is entirely within the bounds of probability for us to look forward to an export tax upon Canadian newsprint as soon as Canada feels that she has that phase of the industry on this continent well within her control."

Dr. Baker insisted upon the necessity of conserving the forest resources of the U. S., particularly by fire protection methods.

With reference to the pulp division, ground wood is selling very freely, with the price firmer. The demand keeps up in a very good way, and any surplus is readily disposed of. Sulphite is moving very slowly, while kraft is in moderate request. Bleached is a strong market, with a very small amount of stock at the mills. The importations of pulp into the United States during January and February indicate the high position of Canada as a source of supply to American mills. Thus in February Canadian bleached imported amounted to 11,756 tons out of a total of 24,679 tons; and for the two months 25,082 tons out of 52,473 tons from all counties. In ground wood, we sent in February 16,631 tons out of 27,766 tons, and for the two months 39,331 tons out of 60,232 tons. In sulphite, the figures are not so good. Our February exports were 22,486 tons out of 57,240, and for the two months 34,558 tons out of 117,994 tons.

Some of the Quebec companies which looked for a delay on the drives owing to the late season report that there has been a decided change for the better, owing to abundant water caused by recent rains. The drives are proceeding very satisfactorily and in some cases will be earlier than last season.

Ontario Market News

The paper market in Ontario is still lagging somewhat and both manufacturers and distributors are complaining of the lack of good-sized orders although in most lines a fair amount of paper is being turned over in small lots. The backward spring undoubtedly has had a deterrent effect on the paper business. The printing trade also is complaining of slackness in business although this is more pronounced in Toronto than it is in other centres in the province. There is, however, a buoyant feeling in both the paper and printing trades and it is generally believed that the present "spotty" condition in these fields may be replaced by activity of a marked character any day now

As indicating the possibility of an early readjustment of prices in the book paper line one of the leading Ontario manufacturers in that line sent out a circular to the jobbing trade last week dealing with the subject in the following words: "Since October last we have been confronted with a gradual advance in our costs of manufacturing. It has been our hope in the interval that such advances were only of a temporary nature and that particularly raw material would recede to their 1922 level. It is our firm conviction now that we cannot look for a lowering of costs at any near date. Considerable of our sales are quite satisfactory as to quantity, quality and price but there are many instances where either the quantity, quality or price, taken in conjunction, are so unprofitable as to work an injustice to us. For the purpose of endeavoring to remedy these discrepancies we are withdrawing all prices and quotations." This is taken to foreshadow an advance in some lines of book papers and it is possible that other kindred lines of paper may undergo similar treatment.

In conversation with the Pulp and Paper Magazine of Canada, a leading Ontario book paper manufacturer forsaw a big export market for Canadian-made book paper and he predicted that he looked for the time when this country would be exporting nearly as large a percentage of book paper as Canadian-made newsprint is now recording. He pointed out that at the present time twenty-five per cent more book and writing paper is being produced in Canada than during the war years and that with the new mills in operation and others expanding the production is now greater than the consumption. There was no reason, he said, why the Ontario mills should not branch out and go after trade in this line in the American market.

PULP. —The pulp market continues steady with paper mills buying lightly and carrying only small stocks. Generally speaking no advance is looked for and this accounts, to some extent, for the light buying. It is believed that the pulp market will be stable for some time yet and that no decline will take place for some weeks at least. It is taken for granted that if the water conditions remain good for a considerable period the groundwood market may soften some. Groundwood pulp is stationary at from \$36 to \$37: Bleached \$90 to \$100: Unbleached sulphite \$70 to \$80 and newsgrade \$65, with little in the market.

TWINE. —Jute twine continues to show a stiffening tendency but other lines remain about the same. In common with paper lines twines have been in light demand of late but the market is looked to to regain its activity very shortly.

KRAFT. —There is no great activity in the kraft market although mills are fairly busy and demand seems to be picking up some. Kraft paper prices remain unchanged at \$8.75 in car lots and \$9.50 in ton lots for m. f., with 15 c. added for m. g. Kraft pulp is quoted at \$72.50.

NEW YORK MARKETS

New York, May 26 (Special Correspondence) — According to an announcement made this week, the International Paper Company will not advance prices of newsprint paper for the latter half of this year. The announcement issued by the company states that prices will remain unchanged on standard newsprint produced on "regular machines," and many in the trade are trying to figure out whether the intention of the company is to increase prices on paper sold to

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other than regular customers or on any paper manufactured on machines other than those kept constantly on newsprint by the I. P.

The fact that the largest producing company on the Continent will not change prices of newsprint for the balance of the current year prompts members of the trade to expect that other manufacturers will also refrain from advancing quotations. This will mean that the contract price of standard news will be maintained at $75 a ton f.o.b. mills in rolls, which has been the market level thus far this year.

There are no indications of any recession in the consumption of print paper. Instead publishers seem to be using larger quantities than hitherto; certainly, the average newspaper in New York and in most other large cities is printing bigger issues than are ordinarily published at this time of the year. Display advertising is running heavy, and publishers are finding it necessary to put out exceptionally large issues to accommodate all the advertising given them. By way of example, one of the leading local afternoon papers several days ago printed an issue exceeding 50 pages, while a morning newspaper is printing an issue in excess of 40 pages nearly every day of the week.

In connection with fine papers, it is stated that one of the bullish factors now existing in this branch of the market is that jobbers are carrying unusually small stocks of bonds, linens and ledgers, which condition holds true to more or less degree in nearly all other kinds of paper. It appears that paper merchants are still somewhat reluctant to stock up, especially with fine paper. Most of them have not forgotten their experience of several years ago when they were caught with large stocks on a declining market, and the policy in force in a great majority of cases at present is that of keeping inventories down and of buying from mills principally to cover actual orders from consumers. Jobbers in New York frankly say that they are stocking far less paper today than ordinarily; mill men also state that there are indications on every hand that merchants stocks are lighter than has ever been known in recent years.

The significance of this is that the great bulk of fine paper which has been manufactured and shipped by mills during the past few months has moved into consumption. And there is no gainsaying that fine paper manufacturers have been busily engaged. Most mills in the Holyoke district are running at very close to capacity production, and have been for some time; moreover, reports assert that they have a sufficiency of business booked to warrant heavy production for quite some time ahead. The technical position of fine papers therefore is strong, and there seems little probability of excessive stocks serving to weaken the market. The tendency of prices at present is firmly upward, and manufacturers frequently are advancing quotations slightly since raw materials are almost constantly rising in cost.

Book papers are firmly quoted and are meeting with a good demand. A majority of mills are well supplied with orders and are shipping out their product about as quickly as it comes from machines. Consumption of book paper may sag a little during the summer but no signs of any such development have yet been noted, and any loss of consumption during the next several months — if such occurs — will doubtless be made up in the fall, as prospects for increased demand at that time are exceedingly favor-

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WOOD PULP AGENTS

able. Machine finished book is quoted at around 7 cents a pound f.o.b. New York, and coated book is priced by mills at from 9 cents upward. Some grades of machine finished are reported selling at 6.75 cents a pound, though reports state that the bulk of supply moving, particularly to transient buyers, is bringing 7 cents or higher.

Demand for wrapping papers from the West is said to be active though on the whole this class of paper is experiencing comparative quietness at the moment. Stocks, however, are reported light, both at consuming and producing points, and mills are running at a fair rate of capacity and have a considerable volume of orders on file.

Boards are moderately active. If anything, there has been a little broadening of demand lately, and the price tone is firmer than it was several weeks ago. Eastern mills are quoting $62.50 a ton f.o.b. New York on plain chip and $65 a ton on news board, and only in exceptional cases are they shading these prices. Box manufacturers are fairly busy although it is apparent that folding and corrugated boxes are in relatively larger demand than square and oval set-up boxes.

GROUND WOOD. — The main factor which is making for a rather quiet market in mechanical pulp is that most of the important consumers in this country are enabled by favorable water conditions to produce nearly all the pulp they require at present. In fact, a good many manufacturers are themselves sellers to more or less extent, and open market buyers therefore are occasioned little difficulty in locating all the supply that they want. It is stated that consumers in the West are buying in fairly good volume, and indications are that the bulk of the current movement is in that direction. Prices are quotably maintained without any change of note. Domestic grinders ask about $37 to $38 per ton at shipping points for prime spruce ground wood freshly ground and for prompt shipment, and Canadian producers are reported offering spot pulp at down around $33 a ton.

CHEMICAL PULP. —— Prices of chemical wood pulp are holding firm in the face of a rather narrow demand from consuming quarters. Paper manufacturers seem determined to hold off as buyers of pulp until they have received some of the supply they have on order for first open water shipment from Sweden and evidently until they see what effect, if any, the arrivals from abroad have on the market here. It is generally conceded that fairly heavy supplies are due to be received from Scandinavia during the next month or two, since consumers for some time past have placed orders for sizeable amounts for spring shipment. Importers assert, however, that not all the supply that was on order will arrive, owing to the strike in the Swedish pulp industry, and that, if anything, the developments in the near future should serve to strengthen the market here instead of weakening it.

Prime unbleached sulphite of foreign origin is reported selling at from 3.35 to 3.50 cents a pound ex-dock New York or other American Atlantic ports, and Swedish kraft pulp is holding firm at 3.35 to 3.40 cents per pound. Unsold stocks of pulp held on the spot by importers are admittedly small, and sellers consequently can afford to adopt an independent attitude as they are not obliged to push sales. Domestic pulps are moderately active though most of the supply moving is on back orders or contracts. There is a general lull of demand affecting all kinds of chemical pulp but failing to disturb quoted prices.

RAGS. The papermaking rag market is moving along showing little development of importance. Consumers are buying in a reserved manner. One reason for this is that papermakers look for prices to ease at least a little further as the summer approaches, and another is that the inventory period is drawing near so that mills desire to keep stocks low. Furthermore, as regards the low grades of rags, arrivals from abroad have been so heavy in recent weeks that consumers are well supplied for a time and can well afford to remain out of the market temporarily.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Red and White Pine	Upset price -	$6.00 per M. ft. B. M.
Spruce (too large for pulpwood)	—	$5.00 per M. ft. B. M.
Jackpine (banksian)	—	$2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests

Toronto, April 16th, 1923

N. B. — No unauthorized publication of this notice will be **paid for.**

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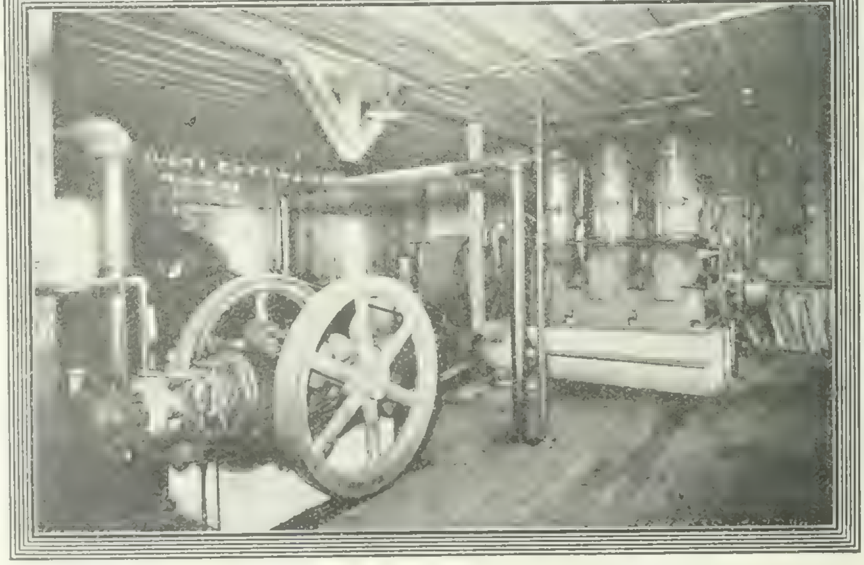

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:-: EDITORIAL :-:

MONTREAL IN SUMMER

Members of the Technical Section have been coming to Montreal in January for many years and we venture to say that few of them realize how beautiful is this metropolis of the Dominion in the summer. Besides the natural beauties of the place, with its tree covered streets, its mountain in the background and the majestic St. Lawrence flowing past its miles of water front, there is probably no place in Canada which offers such a wealth of historic interest and attractive surroundings.

The Pulp and Paper Magazine has in times past had the pleasure of entertaining the executive and committees of the Technical Section but this is the first time the publishers have had the opportunity of extending an invitation to the entire membership to visit their modern printing plant at Ste. Anne de Bellevue, and to hold a business meeting and take lunch nearby at the Senneville Country Club. This invitation is extended for the first day of the summer meeting, Thursday, June 21st. Readers of the magazine have been accustomed to seeing the post mark, "Gardenvale", and when they reach this spot, they will see the reason for so naming the private post office of the Industrial and Educational Publishing Company.

The Section will make headquarters at the Ritz-Carlton Hotel in Montreal and proceed at 9.30, Daylight Saving Time, by motor for Ste. Anne de Bellevue along the shore of the St. Lawrence River and Lake St. Louis. The party will drive through the beautiful grounds of Macdonald College, visit the Garden City Press, the home of the Pulp and Paper Magazine, and then go to the Senneville Country Club where a short business meeting will be held for the reading and discussion of one or two technical papers, after which lunch will be served on the verandah overlooking the Lake of Two Mountains. After luncheon, the party will cross Lake St. Louis in motor launches, furnished by several of the citizens of Ste. Annes and Senneville, to Beauharnois for the purpose of visiting this division of the Howard Smith Paper Mills, Ltd. This is the first time that the Technical Section has had the privilege of visiting a mill manufacturing the very highest grades of paper, and Mr. C. Howard Smith, President of the Company and former President of the Canadian Pulp and Paper Association, will be at the mill to welcome the guests. After visiting this excellent paper manufacturing plant, the party will proceed to Montreal where a complimentary dinner will be served at the Ritz Carlton Hotel and an evening of entertainment will be provided.

The second day of the meeting will be given up to the visiting of points of interest, either historic or otherwise, in and around the city. The committee is having a hard time selecting the best from the large number of interesting possibilities, so that it is probable that visiting members will be provided with a list of opportunities from which they may select those that appeal most to them.

Further details of the program will be given in the next issue of the Magazine.

One of the most pleasant features of the program, as it is planned by the committee, is arrangements for the entertainment of ladies. In fact the whole program is so laid out at present, that ladies will be interested in every feature of it — except possibly the technical papers to be read at the business meeting. It is urgently requested that all members who think it possible for them to attend to send their names to the Secretary immediately so that proper arrangement can be made for everybody's entertainment.

IN THE WOODS AT OTTAWA

There is some opportunity for doubt as to whether Parliament is in the woods with regard to the forestry situation or whether the Government is merely up a tree. It will be recalled that in his Budget speech, the Minister of Finance stated that Parliament was quite aware of the serious situation with regard to pulpwood supplies for Canadian mills, and that a commission would be appointed to look into the matter. Perhaps in the light of forest fires which are burning pretty generally over the Dominion, we may see something done more promptly than might otherwise be the case.

Nothing good in the way of results can possibly come from fiddling with a situation such as confronts the Dominion at the present time. The danger to the very existence of Canada's largest manufacturing industry has become greatly aggravated in the last half decade, and it is only within the last two years that the public, through the educational efforts of the press and other means, has come to appreciate even a fractional part of the serious results that must follow any further diminution in Canada's forest wealth. Those who have given practically their lives to the study of the matter realize that there is but one solution of the problem — Protect what we have and plant more trees. This protection and planting must be organized as a definite program by Provincial and Federal Governments. To carry out an adequate program of protection and planting will require funds. Some funds will come from the sale of Crown land wood, but with the continued destruction of the forest by fire and insects and windfall, there inevitably must be a decrease in revenue from this source. Furthermore, it is essential that both parts of the program be inaugurated at once. We realize fully that protection is being provided to some extent, but the means of protection for the forest against fire are notoriously inadequate, and the recent destruction of thousands and thousands of young trees merely emphasizes the necessity of immediate action in providing for the future forests. Additional funds must be provided for the carrying out of these programs. It is appropriate that the growth of the forest should provide as much as possible of the required revenue. Cutting rates could be doubtless increased slightly in most provinces for wood cut on Crown land, but the wood cut on private land is not contributing its share to the cost of maintaining the forest. There are two ways of getting money from this source, one would be a direct tax on standing timber, and the other would be to levy an export tax on pulpwood shipped out of the country.

The Pulp and Paper Magazine strongly recommends an increased expenditure for forest fire protection and that the money for this be provided, first by an export tax on pulpwood shipped out of the country, and second by a slightly increased charge to holders of Crown land cutting licenses. The latter would have the effect not only of providing revenue for this necessary purpose, but at the same time would tend to enhance the domestic demand for pulpwood cut on free hold land, for which the export demand would become more or less curtailed.

CANADA FORCED TO LEAD IN PAPER PRODUCTION

Dr. H. P. Baker, secretary of the American Paper and Pulp Association intimates in a recent speech that Canada is seeking to control the paper industry of this continent. It seems quite likely that Canada will in time dominate the production of paper made from woodpulp, but this situation is being forced on the Dominion rather than being of Canada's own seeking. The situation is one which requires the greatest amount of foresight and careful management. The problem is not one of seeking control by Canada of this important industry, but rather the finding of means whereby the amount of business in the manufacture of pulp and paper which is forced on Canada can be satisfactorily and continuously maintained. The present condition of affairs is due primarily to the American spendthriftiness with regard to natural resources, and in this instance particularly, the resources of forest growth. The effect of promiscuous, careless cutting and destruction of the forests in northeastern United States, and to a considerable extent elsewhere, has had a double effect, first in the direct removal of an enormous amount of raw material immediately required for paper production, and indirectly it has reduced very seriously the flow of streams whose water power has been required for the production of mechanical pulp. The serious and extensive diminution of these two important factors in paper production has caused the entire closing down of some mills and very serious interference with production in many others.

Canada comes very near being in the position of a person presented with a valuable horse and having little or nothing with which to feed it. We are having forced upon us an enormous market with an almost insatiable demand for newsprint, and a growing demand for other grades of paper made from woodpulp, as well as hungry paper mills demanding enormous supplies of woodpulp, and the end of fodder for some of our mills is already in sight. Not only are we very near the end of the continuous production of pulpwood from some areas, but many of our streams whose power has been driving mills are in a deplorable state as regards continuity and uniformity of flow. So serious has this situation become in some of our important pulp and paper manufacturing districts, that the Government has found it necessary to construct at great expense storage reservoirs sufficient to hold back the ever increasing freshet water of the spring in order that productive operations may be maintained during the succeeding dry season.

While we do not agree with Dr. Baker's premise that Canada is seeking to control the newsprint industry of this continent, we do agree with him that the solution of the problem of future newsprint supply lies almost entirely with those who have it in their power to preserve forest lands in a productive state and to protect, while protecting the forests, the water powers on which pulp production depends. By protection of the forest we mean not only the education of the public to the serious results of forest fires, and the need for constant care when in the woods, nor do we mean only the adequate patrolling and sufficient punishment of those who deliberately or through thoughtlessness cause fire in the forests, but we mean a complete forest program which will apportion sufficient wood growing land to a company desiring to manufacture wood into commercial products and to demand that such companies either of themselves or through the Government by the payment of a proper fee maintain this forest land in a productive state. The Canadian policy heretofore has, to a considerable extent, been an encouragement of wanton exploitation of the forests rather than the husbanding of this resource.

Annual Meeting of American Pulp and Paper Mill Superintendents' Association

The Pulp and Paper Magazine of Canada enjoyed immensely the privilege of being a guest at this remarkably successful and jolly gathering.

The word Americans was evidently to be taken in its broadest sense, because the handsome red ribbon and bronze pendant carried the legend ''International Convention American Pulp and Paper Mills Superintendents' Association.''

Many an old friend of the Couch roll and Calender stack greeted us as we strolled the lobby of the Kimball Hotel, last week at Springfield, Mass., or listened in on the papers and discussions.

The discussions were very frank and the papers short.

The paper maker who doesn't like an argument is a rare bird and probably stayed at home. Time was the only factor in applying the closure and chairman O'Connell, the President of the Association found it hard to shut off the debate at times.

The convention took a whack at politics in passing a resolution memorializing Congress to protest a Canadian embargo on pulpwood, which is considered possible in the near future.

The following account gives only a meagre idea of this interesting convention of an association of great potential value to the industry.

Technical discussions of the various phases of pulp and paper making and a banquet in the Kimball hotel were the features of the first day of the Annual convention of the International Association of American Pulp and Paper Superintendents.

The banquet was for men only and in order that the women might not feel slighted they were treated to a clambake at Riverside park yesterday afternoon. A special car carrying 50 or more wives and daughters of the delegates left at 3.30 and did not return until evening.

Extemporaneous talks were given at the banquet and entertainment was furnished. The banquet was a complimentary one given by the Paper Makers Chemical Company, Buchanan, Bolt & Co, Holyoke Bar Company, B. F. Perkins & Sons, INC., Casper Ranger Construction Company and Walsh's Steam Boiler Works, all of Holyoke.

Technical Subjects Discussed

At the afternoon session L. M. Booth of the Booth Chemical company talked on the Boothal pulp and water saver, which is a chemically balanced dry powder coagulant designed to purify the water used in paper making and gather up the paper-making materials in this water to prevent waste. Mr. Booth was followed by Harold Bing of the Sandusky Foundry and Machine Company, who advocated the use of suction rolls on all Foundrinier paper machines.

R. R. Best of the Western Paper Makers' Chemical Company, discussed the foaming of paper and T. E. Dial of the Vacuum Oil Company pointed out the saving that could be effected by proper lubrication. Several minutes were consumed after the reading of each address in discussion of the subject by delegates. Moving pictures supplied through the courtesy of Price Brothers Ltd., of Quebec, Can., and the Riordon Company Ltd., showed the manufacture of pulp from the time the tree is cut down until it is ready to be made into paper.

Ex-Mayor John J. White of Holyoke, chairman of the arrangements committee, opened the convention with an address of welcome in behalf of the superintendents of the paper industry in Springfield and Holyoke. Mayor Edwin F. Leonard welcomed the delegates in behalf of the citizens of both cities, saying that the selection of Springfield as the convention city befitted the fact that it is located in the heart of the paper industry of the East.

John H. O'Connell of Harrisville, N. Y., president of the association reported that 112 new members were taken in during the last year and three new division associations established, in Chicago, Quebec and Montreal, and the Connecticut Valley association, of which former Mayor White is chairman and J. E. Madore of Holyoke, first vice-chairman.

500 delegates and guests of the convention sat down to the banquet in the Hotel Kimball. This was the closing event of the second day of the convention, and followed sectional meetings and an inspection of Holyoke paper mills. The women accompanying delegates enjoyed the day at Mt. Tom, where luncheon was served.

William F. Whiting, head of the Whiting Paper Company of Holyoke, was the first speaker at the banquet, and after pointing out the cost of Government he stated that the pioneers who founded the United States did so to gain just what Americans are losing today—''freedom of thought and action.'' He closed with an appeal to the delegates to preserve for future generations what past generations worked to build up for the present day.

Col. B. A. Franklin of Strathmore Paper Co, explained the four principles which make for scientific management, and then he explained that while one of the greatest problems now facing industry is to make labor happy, he believes that this can best be accomplished by friendliness and fair dealing.

National President John H. O'Connor gave the address of welcome at the banquet, and former-Mayor John J. White of Holyoke, chairman of the Connecticut Valley Division of the association, was toastmaster.

Mr. Whiting in his address said that great social and economic changes are under way in the life of the country, and that this is caused by a struggle to build a new structure on an old foundation by adding organization to organization. A generation ago, he said, the main contact of the individual with the Government was through sheriffs, police or political meetings, but with an increase in industries the American individual is taking more interest in government. The Government itself must keep out of both production and industry, Mr. Whiting said.

Few persons know the cost of government, the speaker asserted, although it had been shown by the industrial conference board and the Federal budget system that a man must work from Jan. 1 to March 1 before he receives anything for himself. The money earned in that time goes to support the Government.

In explaining why he decided to talk on "Scientific Management," Col. Franklin said that he could see "no use in talking about prohibition because we do not have any." He did not want to talk about the World Court, he said, so took the management subject.

Col. Franklin stated that if a manufacturer could divide his force into two groups, management and production, and then collect all of the knowledge his employes had of the manufacture of his product it would be found that collectively they possessed more knowledge than is possessed by the managers. No one individual would, of course, possess all this knowledge. This proves that managers must by consultation and friendliness secure the information possessed by the workers.

Then he said that it should be the function of the superintendents to select the employes who could do a particular operation best. Men selected under the first two principles should then be trained, he said "We are too busy to train our men enough," he said. "There is a tendency to cuss the fellow who does not do his work right, instead of training him in the proper method." As the fourth principle he said that the management does too little work and expects too much from the workmen.

Friendliness and fairness are two principles which he said would make for the best relations with employes.

After a study he said he found that "2,500 years ago they were discussing the same problems which we have today—except prohibition—and these problems will always be with us."

Gatchell's orchestra furnished music and Mrs. Janet Colson Webster, soprano, sang several solos with Mrs. Edythe Snell Gardner as accompanist. Cappucio and Ferrari, girl specialists, entertained with music on the violin and accordion, and were repeatedly encored. The Garden City Trio, comedians, completed the program.

There were three sectional meetings Friday. At the first meeting held in the grill room of the Hotel Kimball, B. T. Larrabee of Cumberland Mills, Me., presided and technical papers on chemical pulp manufacture were read by the following: Theodore Safford of the Racquette River Paper Company of Potsdam, N. Y., on "The Variables of Wood Chips"; O. L Berger of New York city on "Sulphite Mill Control," and Edwin Sutermeister, chief chemist of the S. D. Warren Company of Cumberland, Me. on "Losses in Making Soda Fiber."

At the second sectional meeting of printers and papermakers, Charles B. Porter, secretary of the Connecticut Valley Club of Printing House Craftsmen and superintendent of printing of the Springfield Fire and Marine Insurance Company, spoke on the "Problems of the Printer." His paper outlined the troubles of the printer when the print paper is lumpy or when the ink is not of the right kind. A lengthy discussion followed.

In the afternoon after luncheon the board mill superintendents met with Claude E. Nicely of South Bend, Ind., the presiding chairman. Papers were read by T. B. McBain of Port Edwards, Wis., on "Waste in the Paper Industry," K. T. King of Chicago on "Coloring of Paper," Herman R. Harrigan on "The Beater," and A. W. Nason of Green Bay, Wis., on "The Value of the Save-All." Motion pictures followed this meeting.

Resolutions memorializing Congress to protest against the proposed Canadian embargo on pulp wood to the United States and pledging support to Herbert Hoover and the department of commerce to relieve the present freight congestion on the railroads due to the shortage of cars were passed at the closing sessions of the convention.

Nelson R. Davis of the S. D. Warren company, Cumberland Mills, Me., was unanimously elected president of the association for the coming year, succeeding John H. O'Connell of Harrisville, N. Y., Mr Davis is the first New England man to head the association since the organization five years ago.

Five vice-presidents, representing some of the various district associations, were elected instead of three, an amendment to the by-laws carrying the change into effect. The following were elected, as suggested by the nominating committee, headed by Herbert W. Server, West Carrollton, O.; E. T. Coughlin, Allied Paper mills, Kalamazoo, Mich., first vice-president;Homer Stafford, Knowlton Brothers, Inc., Watertown, N. Y., second vice-president; B. T. McBain, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; third vice-president; William A. Anderson, Kinleith Paper Mills Ltd., St, Catharines, Ont. fourth vice-president; Herbert W. Server, Miami Paper Company, fifth vice-president. Thomas Hogan, Fitchburg, Mass., cast a unanimous ballot for all the candidates.

Peter J. Massey of the William F. Hall Printing Company, Chicago, present treasurer of the association, was elected secretary-treasurer after an hour's debate, during which President O'Connell twice pounded the meeting to order.

Massey was the candidate for the office suggested by the nominating committee. Ex-Mayor John J. White of Holyoke protested that when he left the nominating committee meeting at 1 a.m. only two candidates, Pearl C. Barrett, Kalamazoo, Mich., present secretary, and William McNaughton, New York city, were on the list. Stafford, another member of the committee, verified White's statement.

N. M. Brisbois vehemently resented the inference that part of the committee worked in the dark while the other half slept. Chairman Server explained that Massey was chosen because of President-elect Davis's desire and after opposition developed against both candidates first suggested. The storm subsided. Massey who withdrew his name to allow the president to choose his own secretary, as has been done in the past, was nominated without opposition and elected by a rising vote.

Watertown, N. Y., made the strongest bid for the convention in 1924. The final decision, however, rests with the executive committee, which in a resolution passed was urged to select a city in which the industry is so developed that delegates may see all the processes of paper and pulp manufacture in operation.

Mills Will Buy Coal Early to Help Railroads

The superintendents, supporting Secretary Hoover, agreed to use their influence in purchasing the winter's coal supply before September 1 to prevent railroad congestion, to load all cars to capacity and not order more cars than are absolutely necessary until the railroads recover from the effects of the war.

Former Mayor White, C. H. Kent of Holyoke and other members of the Connecticut Valley division received a rising vote of thanks for their work in making the convention the most successful in the history of the association. Mayor Edwin F. Leonard, M. M. Marshman and the Chambers of Commerce in Springfield and Holyoke were also praised for their hearty co-operation.

"The greatest compliment was paid the committee by a western delegate, who said that until he came to the convention he believed the East was old and crabby and seldom if ever rallied to a high pitch of enthusiasm," Mr. White said. "But if this was a fair sample of New England spirit, he was all for it."

THE ORGANIZED SUPERINTENDENTS

By B. T. McBAIN

Nekoosa-Edwards Paper Company

A superintendent must not only be boss. He must be more than merely the head of production. He must be an educator. Some one had to teach him. To be sure, he was a willing scholar, but there may be hundreds of willing scholars working in the mills he supervises who would like some day to climb the ladder in their chosen trade.

It is due the superintendent's employer that the knowledge of the Superintendent be disseminated and someone always coming along behind him, capable of taking hold of the wheel and guiding the course of the mill's business, that the Superintendent may be able to say when he is offered a position higher up "Yes, I have a man already instructed in my work and able to carry on."

But the Superintendent must look even farther back in this educational work and see that his assistant also instructs the man below him and so on down the ladder that there may be no hitch or let up in the work when promotion time comes.

Geo. D. McKinnon, President McKinnon Steel Co., Ltd., Sherbrooke, was recently elected vice-chairman, Quebec Division of Canadian Manufacturers' Association.

The mark of a saint is not perfection, but consecration. A saint is not a man without faults, but a man who has given himself without reserve to God.

THE GOSPEL OF SALESMANSHIP

Not to be behind Dr. Fosdick, Dr. Grant, or any of the brilliant religious luminaries who have attracted attention of late by their tendency toward revamping the Scriptures, the Salesmen's Association of the Paper Industry is writing its own Gospel. This Association which was the first big national organization to "rate" an official chaplain, has now begun to build serially a new Gospel of Salesmanship around the Ten Commandments of Salesmanship offered the Association at its annual convention by Dr. Frank Crane.

The new Gospel of Salesmanship will be a symposium of the best thought of the salesmen of the paper industry. In its monthly bulletin to members of the Salesmen's Association, for May, the first of the Ten Commandments offered by Dr. Crane serves as a text for a discussion by H. H. Reynolds, the retiring president of the Association. The other nine commandments will be discussed in turn by other leaders in the sales field of the industry. Following is the first chapter of the New Gospel of Salesmanship.

By H. H. REYNOLDS

"Be Agreeable" reads the first of Dr. Frank Crane's "Ten Commandments of Salesmanship." The command" is so self-evident as almost to seem superfluous "Any salesman ought to be agreeable," we think. We assent, mentally, to the proposition and then go on to the *next* commandment, without asking ourselves "Are we being really agreeable to our customers — or as agreeable as we ought to be?"

If we are not agreeable to our customers, we have lost the first move in the game of Salesmanship. As in chess, the first bad move may mean the loss of the game.

An agreeable, merry human fellow who comes into the office with a smile and a chuckle, who shakes hands as if he likes you, and makes the world seem a pretty good place after all, is himself the best recommendation for his goods. You know such a chap isn't worrying about his prices or deliveries. He is all *right*. He creates confidence. He makes you feel he is the best possible man to do business with.

The really agreeable man is a man with a clear conscience and an open mind, who is not worrying about himself, and therefore has time to be interested in people and in you.

A mean man is seldom agreeable. He is too selfish. Salesmanship is getting your customer to agree with your plan or proposition. The first step toward this is to make him feel you are *agreeable* — the kind of chap he can safely agree with. — Sell yourself to him first by being agreeable and you can sell him goods later.

TEACH GIRLS TO MAKE PAPER HATS

"Look at our Mary's new hat. She made it herself and she's only nine next Christmas. It looks worth five dollars and it only cost ten cents." This is the remark which one may expect to hear from many proud mothers in the city's most congested districts during the coming summer, when the handicraft program of the Montreal Parks and Playgrounds Association gets into full swing. Little girls and boys too, whose only holiday resorts are the playgrounds operated by the association are to learn this summer what charming things can be made just out of colored paper.

Paper hats, the very latest from Paris, paper flowers of charming hues and various pretty and useful woven objects are some of the things which the children will learn to make.

U. S. IMPORTS OF PAPER INCREASE

The tremendous increase in the consumption of newsprint paper which has taken place in the United States during the past twelve months and the large increase in the productive capacity of Canadian newsprint mills, have drawn attention to the sources of the newsprint supply upon which such heavy demands are being made.

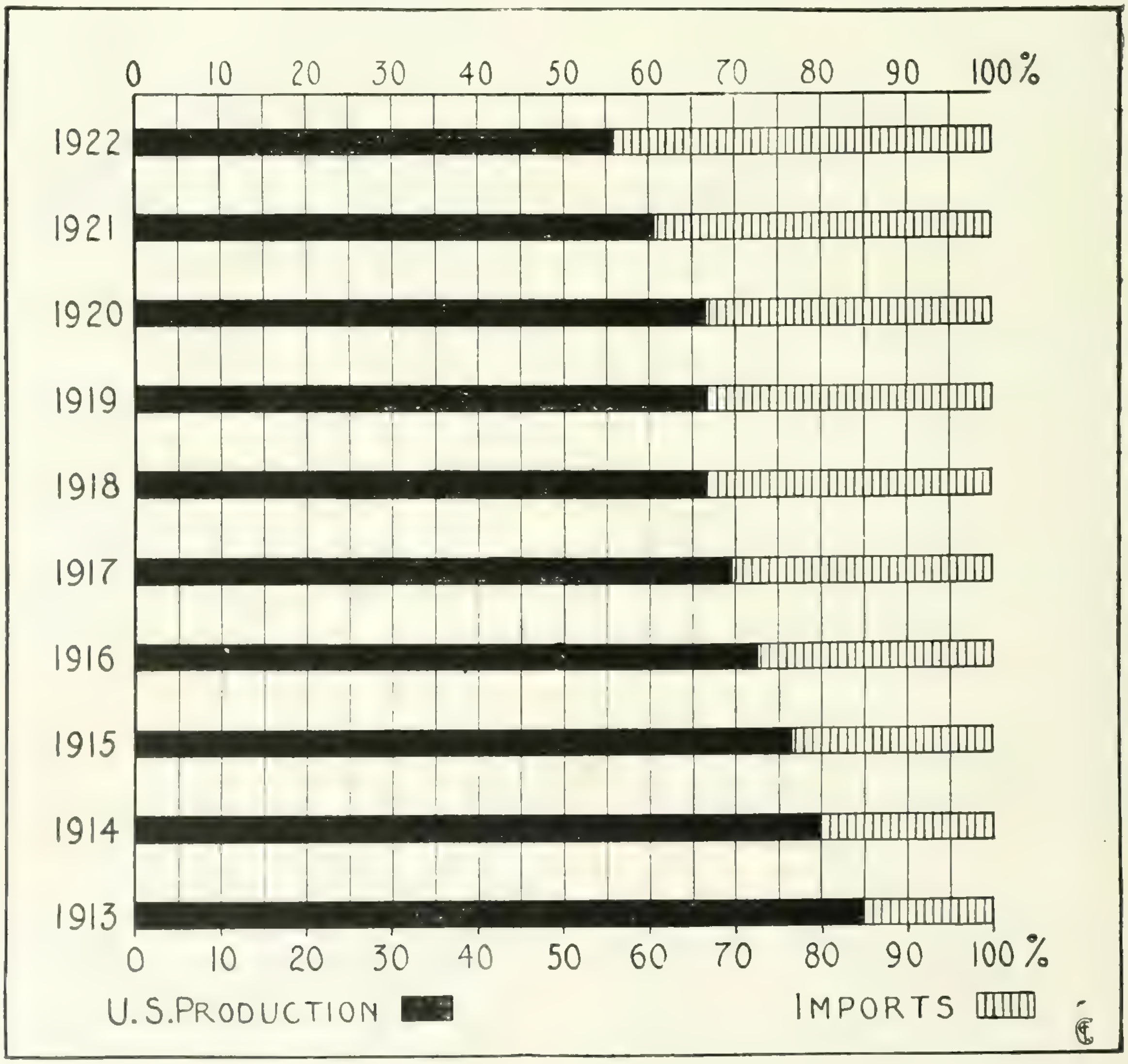
The accompanying chart illustrates the relation between the U. S. domestic production and the importation from other countries. The total supply, consisting of the production of the United States together with the imports, is represented at 100 per cent, and the chart shows how this supply is made up. It will be seen that since 1913 the domestic production has been gradually falling further and further behind the consumption. In 1913 imports formed only 15 per cent of the total supply, while the domestic mills produced 85 per cent of the country's requirements. In 1922 the imports amounted to 44 per cent of the total while domestic mills produced only 56 per cent. During this period the quantity imported rose from 219,601 tons in 1913 to 1,029,266 tons in 1922.

The following table gives the yearly imports and their percentage of the total supply available for consumption:

Year	Imports	P. C. of total
1913	219,601	15
1914	315,475	20
1915	368,409	24
1916	468,230	27
1917	559,113	31
1918	596,270	33
1919	627,559	33
1920	729,866	33
1921	792,481	39
1922	1,209,266	44

While, of course, imports were received from Europe during some of these years, the greater part has been supplied by Canada, and during the war years Canada supplied practically the whole of this paper. ¶In 1919 no imports were received from Europe and with the exception of 3,208 tons from Newfoundland and 41 tons from Mexico, the whole supply came from Canada. European newsprint began to arrive in larger quantities towards the end of 1920 and the total imports of European paper for that year amounted to 49,557 tons. In 1921 European imports increased considerably, the total for the year being 135,629 tons. Last year's imports from Europe were 132,954 tons, only slightly below those for 1921. Imports from Canada have grown very considerably in the last few years. ¶In 1919 Canada supplied 624,479 tons which was equivalent to 99.4 per cent. of the total importation. In 1922 the imports from Canada were 896,312 tons, an increase of almost 44 per cent over the 1919 figures.

The total imports of newsprint into the U. S. A. from all sources in 1922 was over one million tons, being a record high figure. Of the 1,029,266 tons imported, Canada supplied 87 per cent, the remaining 13 per cent being supplied by Sweden, Germany, Finland and Norway in order of tonnage.



The Variables of Wood Chips*

By THEODORE SAFFORD, Racquette River Paper Co.

In any consideration of the problems of preparing chips for chemical pulp manufacture our motives are conspicuously the same as in all process investigation. We all bend our efforts to obtain the highest possible quality at the lowest possible manufacturing cost.

Everyone familiar with wood room operation knows that the quality of product in an otherwise well planned, well installed and carefully operated sulphite mill may suffer serious impairment from a lack of knowledge of the factors influencing the production, and inattention to closely drawn standards of chip size and cleanliness.

The average percentage of cost of sulphite pulp attributable to wood seems to run about 60 per cent. It may be readily seen that an avoidable wood loss of 1 per cent in sawdust means 0.6 per cent avoidable charge for this expensive raw material. Figure that out on your annual tonnage cost and one sees how profitable attention to the wood preparing department may be.

Just when do these losses in quality and cost crop out and where can they be avoided? The vital tool of chip production is, without question, the chipper. There is one and only one place to make good chips and that is in the chipper; beyond that the opportunity is lost and any effort to reduce the oversize chips or spawls results solely in getting them out of sight and into toothpicks and sawdust.

Some common causes of lack of uniformity of product from the chipper are:

1. Worn condition of disc.
2. Face plates which are intended to prevent wear of disc just ahead of knife need renewing.
3. Knives not set to proper gage as regards outward set of cutting edge from disc.
4. Careless placing of shims after poor knife grinding so that cutting edge throughout its length is not at 90 degrees with the axis of rotation of disc.
5. Lack of adjustment of end thrust bearings to run disc as close to bed knife as safety will permit.
6. Bed knife slipping away from disc due to spout base on which it rests being worn out of plane.
7. Intermittent feeding of wood, spout not kept full, allowing sticks to jump badly, causing abnormal sawdust production and spawls when short ends are turned over by revolving knives and cut with the grain.
8. Dull knives.

The angle at which the chipper knives are ground should be determined largely by the condition of the wood, i. e., wet, dry or frozen. The writer's observations on river spruce of about 42 per cent moisture indicate that a double bevel knife of about 42 degrees and 20 degrees makes a minimum of sawdust having a tendency to "draw" the wood with less jumping and retains its cutting edge for the longest service. Knives ground slightly concave are said to reduce power consumption and make little sawdust but have the disadvantage of losing their cutting edge rapidly. The speed of disc is another factor which may have considerable bearing on the sawdust loss. Scandinavian practice seems to tend almost entirely to speeds of less than 200 R. P. M. many mills running as slow as 160 R. P. M. This question is, however, settled in many American mills by the fact that the demand for chips taxes the capacity of chipper installation at speeds of 275 to 350 R. P. M. As an illustration of what careful attention to the points mentioned will do is indicated in Tables 1 and 2, being tests on chips just as they are discharged from beneath the chipper.

	Table 1 % by weight	2	3
Retained on 1.050 square mesh	—44.7	53.4	15.8
0.752 square mesh	—22.9	24.9	39.4
0.525 square mesh	—17.9	12.6	33.5
0.263 square mesh	—10.7	7.0	9.5
Thru 0.263 square mesh	— 3.8	1.9	1.8

As will be noted the percentage of the two larger sizes is quite high, this being because the product contained many "cards" or unbroken bundles of the proper length to make perfect chips. This separation is often accomplished by running all the product of the chipper direct to a crusher. However, with a high speed revolving crusher of well known make, this practice was found to increase the portion under ¼" consisting of sawdust and toothpicks to an alarming extent and also in reducing the cards, not to add materially to the percentage of chips of desired size. In order to take the chips directly to a screen which would select the acceptable chips and remove the sawdust, it was found necessary to open up the cards, this being done by a revolving chip breaker attached to the chipper, which reduced a large percentage of the cards without increasing the sawdust content as shown in Table 3.

The oversize chips may then be passed through the crusher and screened either by again passing them over the first screen or, should its capacity be limited, by use of a second screen, whereby chips may be put to the chip bins with little or no sawdust and of proper size for uniform cooking operations.

Gentlemen, it behooves us to look carefully after this too often neglected department of our mills. Inattention to its details can cost quite as much and more than an extra 50 lbs. of sulphur per ton. A well-known authority on pulp mill operation only recently voiced the opinion that the wood room in many mills was treated like the proverbial stepchild. It cannot continue for long to be "anyways to keep the digesters supplied with chips and let the boiler house consume the waste and blind us to its existence." Wood is constantly becoming scarcer and of increasing value.

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* Address at Convention of the American Pulp and Paper Mill Superintendents' Association, Springfield, Mass., June 1, 1923.

Canada, with its great forests, is being most thoroughly canvassed with a propaganda calculated to bring about the prohibition of exportation of pulpwood even from fee lands. Our national government is busily formulating a comprehensive forestry conservation program. Let us do our part to make every stick entering our mills yield the utmost in finished product while we still have wood in plentiful supply. Your principals, your employers, view this situation with growing concern, but it is up to you Superintendents to give this work the attention it deserves. Yours is the final responsibility in this phase of conservation.

That man may last, but never lives, who much receives, but nothing gives; whom none can love, whom none can thank — creation's blot, creation's blank.

PRICES FOR PUBLICATIONS OF A. P. & P. A.

The American Paper and Pulp Association announces the publication of the following pamphlets, which, owing to the demand from non-members for publications of this Association, are only available at cost on application to the offices of the Association.

American Paper and Pulp Association, Special Report No. 8, "Returning Prosperity in the Paper Industry." A compilation of addresses given by manufacturers and merchants of paper as well as by prominent business men outside the paper industry, at the Forty-Sixth Annual Meeting, April 12, 1923, including a discussion of market conditions by Dr. B. M. Anderson, Jr., Economist, Chase National Bank, New York City, and addresses by U. S. Senator Wm. E. Borah, James M. Beck, Solicitor General of the United States and the Rev. Dr. Nehemiah Boynton. Price .... 25 cents.

Salesmen's Association of the Paper Industry, Special Report No. 6. Addresses before the Annual Meeting, April 1923, including Dr. Warren M. Persons, Economic Research Committee of Harvard University, Lawrence W. Rogers, Professor of Applied Psychology at New York City College, P. T. Dodge, President, International Paper Co., U. S Senator Pat Harrisson and Dr. H. C. Risner. Price .... 25 cents.

Woodlands Section Series, No. 3. Proceedings of April, 1923, convention, including recommendations of the Section's forestry committee, covering the application of practical forestry methods in the management and exploitation of timberlands; pulp wood specifications for New York mills, etc. Price ..... 50 cents.

Earlier Publications still available:

American Paper and Pulp Association Special Report No. 7. Addresses and market conditions discussed at the Fall Business Conference, Chicago, October, 1922. Price .... 25 cents.

Salesmen's Association Special Report No. 5. Addresses delivered at the Fall Business Conference, Chicago, October, 1922. Price .... 25 cents.

Woodlands Section Series, No. 1. Proceedings of April 1922 Convention, including discussions of many of the practical problems of the wood operations of the paper industry. Price .... 50 cents.

The attached coupon may be used

Enclosed please find $...... for which please send copies of publications as checked above to the following address:

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INSTITUTE ITEMS

TROUBLE WITH WIRE SEAM

More Answers

Editor.

Pulp and Paper Magazine.

Dear Sir.

With reference to Backtender's question on wire seam of May 24th issue.

If the crush mark appears on the edges only behind the seam it is caused by a sloppy edge, and can be corrected by trimming the wire.

If it occurs right across the seam it is caused by the wire being too slack and can be remedied by tightening the wire.

The seam is the highest and hardest part of the wire, and as it passes under the couch roll, if the wire is too slack, it causes a shifting or doubling over of the stock, and this is the cause of the crush mark.

Yours truly

Backtender.

ANOTHER EXPLANATION

A Machine Tender thinks the cause was packing due to bump as seam passed under dandy — if he had a dandy.

Another says the trouble could be due to the slice being pretty low, and possibly the seam a little heavy. He advised first to remove the filled spots over Sunday by laying a 2" strip of felt, soaked in kerosene along the seam, until Monday morning, then on taking up the strip, clean out with steam hose. Prevent further trouble by advancing the apron, about ¼ to ½ inch beyond, or ahead of the 1st slice.

The editor of "Questions and Answers" welcomes correspondence on "Troubles". We can't cure them all but we like to help.

THE JOY OF GRATITUDE

He who has learned the habit of gratitude has learned the way to the greatest fullness and rapture of life.

The grateful soul may not be the one to whom life has dealt most bountifully, but the fullness of the heart makes up for any lack.

He who has gratitude is as if he had the best the world could give, for his gratefulness multiplies and magnifies his blessings a thousand-fold; while he who has not gratitude is poor and unhappy with a universe at his feet.

It isn't what we have but how we appreciate what we have that makes life empty or full, gloomy or glad.

The joy and richness that come through gratefulness are no mocking, make-believe things, they are among the most real and abiding possessions of life. And just as we learn that great lesson of gratitude, and yield ourselves to the throb of that finest emotion of the soul, will life take on a steadfast glory and fullness. Gratefulness is always the doorway into real joy. —Ex.

NEWSPRINT EXPORT CURBED BY TARIFF

The volume of Canada's exports of pulp and paper to Australia is dependent upon the present customs tariff of the Commonwealth, which favors the English producer. W. Gorman, who returned to Montreal on Saturday from a six months' trip to the Antipodes, said today: English newsprint enters Australia duty free at present, while the Canadian product pays a duty of £3 per ton, he said. On other grades of paper the English producer is aided by a differential of 10 per cent in duties compared to those imposed on Canadian products.

Mr. Gorman, who represented the Provincial Paper Mills during his trip, said that this 10 per cent differential applied to all grades of paper made by his company, except newsprint.

"It is impossible for Canadian paper to command a broad market in Australia until it enters the country on the same terms as the English product," said Mr. Gorman. "All the Canadian manufacturer asks is equal treatment with the Mother Country. The Australians like us and have no domestic paper industry that might be injured by Canadian competition. I found about 90 per cent of Australians in favor of granting Canada the British preferential. The Federal Government has recently undergone a change in party, and we are hoping that as a result changes will be made in the tariff as it affects Canadian paper.

Sentiment Rules

"Sentiment for the Mother Country is largely responsible for the present tariff, although the English producers buy their pulp from sources outside the Empire, namely, in the Scandinavian countries. The favorable terms that sterling exchange commands in Norway and Finland has resulted in much trade going to those countries. Their pulp is manufactured in Great Britain and exported to Australia under the preferential tariff.

"Thus even with newsprint, which is Canada's leading pulp product, it is difficult to do business with Australia. In New Zealand, however, Canadian paper enters on the same terms as the English product, and the newsprint producers do a fair amount of business there. However, that market is small by comparison with Australia.

"Even if we were on the same footing in Australia with Britain, we would have difficulty in competing with the depreciated currencies of Finland and Norway."

Speaking of general conditions in Australia, Mr. Gorman said that agriculture in the inland districts had been hampered by drought. Along the coast, however, conditions were normal. More wheat is being grown at an average in some places of 28 bushels per acre. Cotton growing is also being experimented with. The only white paper mill operated in Australia has been closed, and there are now only three mills open, which manufacture strawboard, chipboard and kraft. These have a small output.

Asked whether there was a feeling in Australia that Canadian paper mills were the property of United States capital, Mr. Gorman said that this opinion was held in some quarters. While the same thing had been said about Canadian motor car manufactures exported to Australia, Mr. Gorman said that 90 per cent of the cars he saw there were of Canadian and United States manufacture, although the English maker enjoyed a preference. There is only one Australian-made car on the market.

Need U. S. Capital

"When I was asked about the extent to which United States capital was entering Canada", said Mr. Gorman, "I told them that Canada could do with 100 per cent more United States capital. Capital is international, and when it strengthens Canada, it strengthens the Empire."

Mr. Gorman left here for Australia on November 13. He crossed the Pacific both ways on the Niagara of the Canada-Australasia Line, returning to Vancouver on May 26.

MILL WASTE TURNED TO USE

The problem of paper mill waste has been solved by Wm. Tod, junr, & Co, Ltd., of Springfield Paper Mills Potton, Midlothian, who have issued a statement to their shareholders stating that a process has been perfected for making a material which can be used in the place of vulcanite, or, ebonite—and is in some respects superior to either for electrical work.from some of the waste products in the paper mill. The Directors are now considering a scheme for erecting a plant to deal with the new discovery, while tests are being made ad lib.

Brigadier-General J. B. White, of the Riordon Company, Montreal, and Mr. Edward Beck, secretary and manager of the Canadian Pulp and Paper Association, have been appointed a local committee to make arrangements for the reception and entertainment of the Empire Forestry Conference during their visit to Montreal, which is expected to be on July 26. The program will include an inspection of the Forest Products Laboratories, a luncheon, and a tour of the city. The delegates will then entrain for Grand'Mere and other parts of the Province, going as far as Chicoutimi. Local committees are being appointed in various parts of Canada to look after arrangements for entertaining the delegates during their tour of the Dominion, of which the visit to Montreal will form a part. Mr. G. C. Piché is one of the committee for the City of Quebec. The Provincial Government has contributed $7,000 towards the general expenses of the Conference.

The Chicoutimi Pulp Company has sold to Mr. Alexis Tremblay the control of a subsidiary company, the Society d'Eclairage, which operates the electrical service in the Chicoutimi section of the Province.

Our sympathy is with Mr. W. Innis, Montreal representative of the Interlake Tissue Mills Company, Limited, who has received a cable from Scotland announcing the death of his mother.

Mr. W. Gorman, Montreal manager of the Provincial Paper Mills, Limited, has returned to Canada after a long visit to Australia and New Zealand in the interests of his company.

Electric power and light sufficient for a town of 70,000 inhabitants are produced by the machinery of an Atlantic liner of the largest size.

A BIBLIOGRAPHY OF COLLOID CHEMISTRY

By HARRY N. HOLMES

The National Research Council has recently issued a Colloid Bibliography in mimeographed form. The author, Dr Harry N. Holmes of Oberlin College, Chairman of the National Research Council Committee on the Chemistry of Colloids, intends this edition to be preliminary to a more comprehensive one. Yet it is a book of 135 pages containing 1,800 references on 106 topics. All the references are classified and many are accompanied by brief comment as an aid in deciding on their relative importance. This book may be purchased from the Washington office at $1.00.

Among the classified groups are Absorption, Asphalt, Baking, Biocolloids, Capillary Analysis, Casein, Cellulose and Cellulose Esters, Cements, Clays, and Soils, Cleansing, Coagulation, Dialysis, Emulsions, Filtration, Flotation, Foam, Flour, Fogs, Gels, Gelatin, Glass, Glues, Gold, Gums, Hydration, Indicators, Jellies, Lubricants, Milk, Paints, Peptization, Petroleum, Photography, Protein Swelling, Protection, Rubber, Sewage, Silver, Soap, Sulfides, Surface Tension, Tanning, Ultramicroscope, Viscosity and Water Proofing.

The theoretical and industrial importance of colloid chemistry is now admitted without question. In fact it links together the sciences of chemistry, physics, zoology, botany, geology, medecine, agriculture and even astronomy whenever that science deals with comets' tails. Few are the industries that do not have colloid problems to solve. The average citizen is surprised to learn that his own body is colloidal in composition, that his digestive processes are governed by colloidal rules of action and that the bacteria of disease are of a colloidal degree of dispersion. And he is astonished to learn that but for the colloidal absorption of calcium phosphate from the blood stream by his bony cartilege he would be a mere spineless jelly fish. And as colloid chemistry is surface chemistry, it is of importance to this same average citizen to know that the total surface of his blood corpuscles is about one acre.

Plant and animal tissue is largely colloidal too, and should be studied from that viewpoint.

SCHOFIELD PAPER CO. BUSY

Schofield Paper Co., Ltd., St. John, N.B., have been very busy in their manufacturing department and results for the first four months of the year showed a considerable increase over same months of 1922. They have lately installed a rotary card cutter and rebuilt one of their ruling machines. They are now operating three ruling machines up to capacity and are also able to report good spring business in punching and die cutting lobster can liners from pure vegetable parchment paper.

PULPWOOD WAS BURNED

Chicoutimi, Que., June 4. — Forest fires have been spreading in this district, but fortunately, to date, the damage is not heavy. Yesterday fires extended to Port Alfred and a large quantity of pulp which has been placed on the wharves ready for shipment was destroyed. This fire was a very serious one, and it took several hours on the part of volunteer firemen to prevent the blaze from extending to other sections of the wharves, where more lumber was placed.

B. F. STURTEVANT CO. GOES WEST

The B. F. Sturtevant Company has long felt the need of a manufacturing plant in the middle west.

As almost every installation calls for specific engineering, it has been found difficult and expensive at times, to give full attention to this westward business from Hyde Park; therefore the Sturtevant Company has purchased the plant of the Wisconsin Engine Co., makers of Corliss Pumping Engines at Corliss, Wis.

This new acquisition covers nearly ten acres and the buildings have approximately 150,000 feet of floor space.

A full manufacturing and engineering staff will be maintained and closer co-operation given to western customers. Shipping raw material east and the finished product west, adds a good deal to the ultimate cost because of freight charge. The situation at Corliss, will make a substantial reduction in these additional transportation costs. Shipping facilities are ample.

The new plant will be under the same direction as the other factories at Hyde Park, Galt, San Francisco, and Philadelphia with Ex-Governor Foss as President.

Mr. Harry W. Page has been selected as general manager and will be in entire charge of the Wisconsin plant..

For the past six years, he was assistant general manager and was located at the main office of the B. F. Sturtevant Co., at Hyde Park, Boston, Mass.

MUNSEY'S PAPERS ARE CONSOLIDATED

The Globe and Commercial Advertiser, the oldest daily newspaper in New York, which was recently purchased by Frank A. Munsey, has been consolidated with the Sun. For the present the consolidated newspaper will be known as the "Sun and the Globe." This name will be modified when the amalgamation has been fully established with the public.

The Bridgewater Lumber Company has been formed in Quebec City. A mill is being constructed at St. Foy and will be in operation in a few weeks. The president is Mr. Gerard W. Power, president of the Quebec Harbor Commission, former chairman of the Woodlands Section and a well-known advocate of forest conservation.

The American Society of Mechanical Engineers, during their convention in Montreal last week, visited the plant of the Dominion Engineering Works, Lachine. They inspected all the departments, including the one for papermaking machinery, where they saw the process of machining several dryers, frames, and a Pope reel in connection with a 23 inch newsprint machine ordered by the Belgo Paper Company of Shawinigan Falls.

The St. Regis Paper Co., Ltd., are constructing at Godbout, on the north shore of the St. Lawrence, a plant for the handling of pulpwood. The plant has a capacity of 40,000 to 50,000 cords of pulpwood, and will be equipped with the necessary machinery for cutting and rossing the wood. The wood will come by the Godbout River, and will be transported overland by means of a wooden chute, about a mile and a half to the plant, which is situated on the Godbout harbor. Wharves are being constructed in this harbor to enable the wood to be loaded from the plant into boats.

THE WOODLANDS SECTION

IS $500,000,000 A YEAR WORTH SAVING?

By Dr. CLIFTON D. HOWE.

(Canadian Forestry Magazine

Dean, Faculty of Forestry, University of Toronto

In the last analysis, adequate fire protection resolves itself down to the question of whether or not the people of this country wish to save their wood-using industries. Let us look into the service of these to the country. The value of the manufactured pulp and paper products is $250,000,000 per annum. The various companies have invested in the business some $375,000,000. They employ 33,000 men in the mills and in the forest, and they pay them each year $40,000,000 in wages. Isn't that business worth saving?

The value of lumber, lath and shingles produced in one year is $150,000,000. Lumber means boards and deals, dimension stock — not the finished product, as in the case of paper. I can't find just how much is added to this value by the various minor wood-using industries. With reservations, I will say that the minor industries, which depend entirely upon wood, produce products to the value of $60,000,000 annually. They have an invested capital of over $50,000,000. They employ 13,000 people and pay annually in wages around $14,000,000. Is it not worth some effort to keep these industries going?

To these should be added the industries that depend in essential part, but not entirely, upon forest products. These, such as the horse-drawn and motor-drawn vehicles, produce each year products valued at $86,553,314. The capital invested totals over $65,000,000. The employees number over 9,000 to whom are paid wages amounting to nearly $12,000,000.

Going back to the lumber industry proper, we find that its invested capital reaches $250,000,000. It employs 55,000 men, and gives them $60,000,000 in wages annually. That business is worth saving, too, is it not?

There are more than 100,000 people in Canada at work converting the forest products into wealth in some form or other. They are chiefly heads of families or the bread winners of families, thus they represent probably a half million people dependent upon the forest for a livelihood. Are they worth while in their work? Are they worth while to the country?

Must Invest in Protection

Let me emphasize that our great pulp and paper companies, the great lumber concerns will not exist many years longer unless there is more effective fire protection. In order to get more effective protection, the public must invest more money in it. When we consider the area actually under license or pulpwood concession, the amount expended on it as a whole, averages less than one cent per acre per year. In other words, we spend less than a cent an acre a year as an insurance rate on forest lands whose supplies at the present day yields us products to the value of $500,000,000 annually.

When we consider the total forest area of Canada capable of producing marketable materials and divide such area into the amount paid for fire protection, then we find we are investing less than one-fifth of one per cent per acre each year to insure the continuance in the future of the second largest wealth producing industry in the country. The amount invested in protecting the supply of our wood using industries is entirely inadequate. If the people of Canada think it advisable to keep these industries going, they must pay more for forest protection than they are paying at present.

An Erroneous Attitude

A few years ago a government official in charge of the forest fire ranging in his province, in reply to a criticism of the efficiency of his force, made a statement to the newspapers, acknowledging that a certain fire had burned over several townships, but stating that no real damage had been done because no standing timber had been killed, since the townships had already been logged, and much of the area had been burned before. Only non-usable trees, brush, and young growth had been killed, and, therefore, the fire did no harm!

Opinion Dies Hard

This statement reflected a quite general opinion of less than a decade since, and it is quite probable that such opinion may still linger in certain quarters. Its existence, however, has a very logical basis in the development of forest fire protection in Eastern Canada. I believe that it is historically correct to state that fire ranging began with the lumber companies, sometimes voluntarily and sometimes at the instigation of the Government. In all cases the lumberman bore the expense — in Ontario for at least ten years. Then followed a period, extending about twenty years, in which the Government and the lumbermen shared the cost of forest fire protection on a fifty-fifty basis. The modern method is to levy a direct tax upon the lumberman on the basis of a cent to two cents per acre annually. In some provinces, as in Ontario, the lumbermen make recommendations as to the men they wish to serve as fire rangers on their limits, but the actual appointive power lies with the Government; in other provinces, as in New Brunswick, the fire rangers are appointed on the basis of a competitive examination. In case of the lumbermen's associations, the lumbermen pay the major cost, but receive certain contributions from the Government.

Operator's Point of View

Thus, it will be seen that the operator apparently has always paid at least one half and for the greater part of the time the larger portion of the cost of fire ranging upon his limits. He owns only the timber. The land in most cases belongs to the Crown, and the operator pays a small rent for the use of it. When he has taken away all the merchantable timber, he has no more use for the land and it reverts to the

Crown. As a matter of fact, however, there are certain considerations not concerned directly with growing timber that impel the operator to hold on to his cutover lands until the block, berth or limit has been completely exploited. Notwithstanding this, his primary interest is in the merchantable timber of his limit, and, since he pays the greater share of the fire ranging cost, it is perfectly natural and logical that he should desire the green timber to get the whole or major part of the protection; that his interest in the cutover or previously burned areas should be measured by their degree of hazard in relation to his standing timber.

Even at present, I think it safe to say that the greater portion of the fire protection effort goes to the mature forest. From the foresters' standpoint, however, the protection of the cutover and burned-over lands is much more important than the protection of standing timber. There are at least two good reasons for making such a statement. In the first place, if we may judge by the Ontario statistics on a five year average, less than one fifth of the area burned is timberland and one half the area burned has been previously burned. The figures, of course, may be interpreted in two ways, but either substantiates the point I am trying to make. They indicate either that more effective protection is placed upon the standing timber and, therefore, less is burned, or that the standing timber is not as great a hazard and, therefore, does not need as much protection as the areas that have already been burned at least once before.

Must Protect Old Burns

In the second place, although we have no accurate field data on the subject, the areas burned in Eastern Canada undoubtedly greatly surpass in extent the areas containing untouched saw timber and the areas cut and not burned combined. Indeed, it is probable that much more than half of the forested area has been burned within the past 75 years.

Reference to a study of 80,000 acres of burned-over pine lands in central Ontario illustrates this point. On areas burned but once there were 110 young pine trees per acre, burned twice, 14 trees, burned three times, 7 trees and on areas burned many times only three young trees remained on the average acre.

If we supposed that all the 110 trees on the area burned once lived to maturity and all the 80,000 acres to have been burned but once, the value of the final crop in dues and stumpage at the present rate of these would be $3,900,000. However, the area stocked as it is after the repeated fires will be worth at maturity in terms of commercial timber about $900,000. Thus the repeated fires reduced the potential value of these 80,000 acres by a round sum of $3,000,000. That is on 80,000 acres. What is the area of similar conditions in Eastern Canada? We don't know, but we do know that it is enormous. Areas are being repeatedly burned in Ontario at the rate of 100,000 acres a year on a five year average. Young growth is doubtless being killed in a similar proportion in other provinces. We simply cannot endure this, if we are to have a future supply of timber in Canada. Therefore, more adequate protection of areas not at present containing saw-logs is as imperative as it is a patriotic duty.

If anger arise in thy breast, seal up thy lips and let it not go forth. Anger is like a fire, and angry words are like breath to fan it. — Jeremy Taylor.

DEFINITE FORESTRY POLICY URGED FOR NEW YORK STATES

Saranac Lake, May 6. — "The cost of wood has now passed the cost of production by reforestation, and the time has now when the state of New York must lay out definite forestry policy, to make possible the utilization of the millions of acres which are now producing little or nothing", said Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, himself a technical forester who for eight years was dean of the New York State College of Forestry at Syracuse, speaking before the Central Adirondack Hotelmen's Association.

"We must face the facts," he added. "Forestry is now an economic problem, and not a sentimental one. These things must be done, if the State is to derive a fair return from its great natural resources:

"We must have a definite program of state and federal co-operation with private land owners.

"There must be an adjustment of taxes to encourage, instead of prevent the reforestation of idle lands.

"The State timber must be used for the common good, to produce the lumber needed by the State, under such proper measures of restriction by the State conservation commission as to protect the forests from devastation.

"Reforestation must be applied on the lands which have been so denuded as to prevent their restocking by natural means

"It is useless to require the private owner to handle his lands otherwise than is found practicable by the State itself on its own lands. The policy of handling land to secure continuous forest growth must apply equally to private and public lands."

FORESTRY ABSTRACTS

B-9 Pulp and Paper Industry Requires Permanent Forests. GEO. W. MCKEE. **Can. For. Mag.** XVIII, No. 3, (March, 1922, p. 661)—C.L.

B-9 The Value of Young Growth on Cut-Over Land. SWIFT BERRY. **J. For.** XIX No. 8 (Dec. 1921, p. 907). The United States Government has to some extent adopted th epolicy of exchanging National Forest stumpage for cut-over lands in private ownership, as adopted the policy of exchanging National Forest This article discusses the principles to be adopted in arriving at a fair valuation of young forest growth on such cut over lands. Supplementing the article are a number of discussions by other foresters.—C.L.

B-9 Sweden's Royal Road to Prosperity. G. C. PICHE. **Can. For. Mag.** XVIII No. 4, (April, 1922 p. 719). Over one-half the area of Sweden is devoted to productive forests. Professional foresters direct all the lumbering operations, in contrast to the practice, with few exceptions, in Canada and the United States. Logging is generally done by jobbers. Utilization is close, wherever the product can be marketed; cutting is always with a view to future productiveness, and protection from fire is very efficient.—C.L.

B-0 The Effect of Forest on Water Powers. E. SCOTT RIVETT. **Can. For. Mag.** XVIII, No. 4, (April 1922, p. 718). The equalization of the flow of rivers is largely dependent on wooded lands—C.L.

PULP AND PAPER NEWS

The subscribed common stock of the Chicoutimi Pulp Company has been reduced from $4,000,000 to $400,000.

Pulp and paper interests are represented on the executives of the Montreal branch and the Quebec Division of the Canadian Manufacturers' Association. The executive Council of the former include Messrs. Art Harries, of the Canada Paper Box Company, and A. D. Huff of the Riordon Company, while Mr. J. J. Harpell of the Industrial & Educational Publishing Company, Ltd., is on the committee. The executive committee of the Quebec Division includes Messrs. H. C. Price of Price Bros., Quebec, and Jean Rolland, of the Rolland Paper Company, St. Jerome.

In the opinion of the Council of the Montreal Board of Trade the Provincial Government should conduct a wagon road connection between the new Temiskaming-Abitibi district and the terminus of the new line of the C. P. R. at Des Quinzes. This would help develop the pulpwood timber resources of the district.

The James W. Sewall, timber-cruising house of Old Town, Maine and Washington, D. C., reports great activity in their business. Mr. Sewall has crews engaged in work, not only in Maine but in Ontario, Quebec, Nova Scotia, Vermont and New Hampshire, so far this year his cruisers have reported on over a million acres of land, and have work laid out ahead for nearly a million acres more.

Mr. Herbert S. Kimball, Consulting Engineer and Mill Architect, of Boston, was recently honored with the opportunity to deliver a lecture before the sessions and graduate students at the Massachusetts Institute of Technology. His subject was "Some Chemical Engineering Problems in Pulp and Paper Mills".

The Canadian Fairbanks-Morse Company have recently supplied the following equipment to paper mills: One No. 1 Nash pump to the Rowland Ford Paper Co., two No. 6 pumps to the Spanish River Pulp & Paper Co., two No. 8 and one No. 4 pumps to the Donacona Paper Co.

They have supplied to the Donnacona Paper Co. — 32 Fairbanks-Morse Motors for their new extension, and have supplied to the Belgo Paper Co. a 75 H. P. type "Y" Crude Oil Engine for driving wood carrying equipment at Van Bruyzel.

Price Bros. have a new power development in course of construction at Chicoutimi, the total of 10,000 h.p. to be generated, being for use at the company's mill at Kenogami about 10 miles distant from the power site on the Chicoutimi River. As to the type of construction, there is a bulkhead section consisting of a solid gravity wall connecting the power house to the north bank. This section runs up to elevation 105.00. On the south side of the power houses there are five sections of spillway of which the crest elevation is 87.5 and this spillway section supports 6 piers at 18 ft. centres which are carried up above this elevation to support the Tainter gates. The elevation of the tops of the gates is 100 ft., which will be the future water level above the dam. A short section of solid bulkhead type will connect the south end of the spillway to a long wing wall of the Ambursen type which continues upstream to the railway embankment. The top of this wing wall will also be at an elevation 105.00. At the upstream end of this wing wall there will be a shorter section of gravity wall running along the railway embankment on the down stream side. This latter piece is about 90 degrees different in direction from the wing wall.

Mr. G. R. Hall Caine M. P., director of Becker and Co. Ltd., London, England, and of the associated Canadian Companies, is to again visit Canada. This time he will open negotiations with the Federal Government for the construction of 200 miles of railway to open up new country for settlers. In view of the fact that Canada is already over-built, so far as railways are concerned, the chances of obtaining Government aid are not rosy.

Mr. John Stadler, assistant manager of the Belgo Paper Company, Limited, is on a visit to England.

The Canadian Pulp and Paper Association has compiled and issued a bulletin giving particulars of all pulp and paper mills in Canada. It is a very useful and informative pamphlet. The data includes the head offices and mills of the companies, cable address, directors and officers personnel, capitalization, equipment timber supply, production, and proposed extensions, together with any work under construction.

Many in the printing and paper trade in Ontario regretted to learn of the death of John Stovel, head of the Stovel Printing Company, Limited, Winnipeg, Man. Mr. Stovel passed away at Rochester, Minn., following an operation. He was born in Mount Forest, Ont., 65 years ago, became widely known in printing and paper circles in Ontario before he went west. The Stovel Printing Company, Limited, which he founded, is one of the largest businesses of its kind in Canada. The late Mr. Stovel represented Winnipeg in the Legislature in 1921 and 1922 as a Liberal and served with the 90th Winnipeg Regiment during the Riel Rebellion of 1885.

The directors of the Spanish River Pulp and Paper Mills, Limited, held a directors' meeting at Dayton, Ohio, on May 31, where they were the guests of the company's selling agents, the George H. Mead Company. Those who started from Toronto were Col. Thomas Gibson, J. G. Gibson, T. H. Watson, T. W. Sime, Col. Jones and George R. Gray, the latter two coming down from the Sault.

S. A. Armstrong, of the Matagami Pulp and Paper Co., Limited, head office Toronto, has returned to that city after a combined business and pleasure trip to Quebec, during which he spent a few days fishing at the Laurentian Club.

A visitor to Toronto last week was George Hancock, head of the Galt Paper Box Company, with branch at Woodstock, Ont. While in the city Mr. Hancock tried out his prowess at golf with Jack Hewitt of Paper Sales, whose guest he was for a day or two.

A meeting of the directors of the Provincial Paper Mills, Limited, was held at the head office in Toronto last week when routine business was transacted. Directors of the Interlake Tissue Mills, Limited, also held a meeting at their head office in Toronto.

William Gorman, of the Montreal office of the Provincial Paper Mills, Limited, reached Toronto last week on his way back from Australia and New Zealand where he spent some weeks in the interests of his company. When seen by the Pulp and Paper Magazine of Canada Mr. Gorman said that inasmuch as he had just reached Toronto on the homeward stage of his journey he was not prepared to talk of his trip other than to say that he had returned greatly benefited in health.

Charles Syrett, of the Victoria Paper and Twine Company, Toronto, spent a few days of last week in Three Rivers, Que., and other Quebec points.

The many friends in the Niagara District and elsewhere of Lorne H. Gardner, President and General Manager of the Garden City Paper Mills Company, St. Catharines, Ont., were pleased to greet him last week on his return from the Southern States where he has been for some months. Mr. Gardner is very much improved in health and speaks with enthusiasm of the South's curative powers.

The Laurentide Air Service machine "G", with Col. Williams and four men has arrived at Fort William from Ottawa, doing the journey from Sudbury in 3½ hours. The machine and another one which has arrived will be used for patrol work on the Nipigon Reserve, with headquarters at Nipigon Lodge.

That the company's three pulp mills and the two lumber and shingle mills have been operating at capacity for the past six months, and that orders have been booked ahead for several months at a profitable price, were statements made by Hon. T. W. McGarry, President of the Whalen Pulp and Paper Mills, Limited, who is leaving Toronto shortly for the Pacific Coast in connection with the company's business.

Three hundred men will be employed in logging operations at Goulais Bay, in Pennefather township, about twenty-five miles from Sault Ste. Marie, Ont., within the next thirty days, by the Thielman Forest Products Company, whose contract calls for 2,000,000 feet of timber a month for the Ford mills at Lanse, Michigan. The timber of the Pennefather township consists of hardwoods of various kinds, hemlock and pine. Other than the hardwoods the products will go to the Spanish River Pulp and Paper mills.

The death took place in Toronto last week of Mrs. W. J. Douglas, widow of W. J. Douglas, late Managing Director of the Toronto Mail and Empire. Mrs. Douglas was born in the north of Ireland and was the daughter of the late Dr. Riordon, who, after retiring from the service of the British Navy, settled in Weston, Ont. Her husband, the late W. J. Douglas, was Managing Director of the Mail and Empire up until the time of his death in 1919. Her brother, the late John Riordon, the well known paper manufacturer, took over the Mail in 1877, the late Mr. Douglas then becoming identified with the enterprise. Charles Riordon of St. Catharines, Ont., is a brother.

The many friends of Harry C. Wood, Sales Manager of Warwick Brothers & Rutter, manufacturing stationers, Toronto, will regret to learn that he has been confined to his bed for some days with illness contracted while on a visit to Atlantic City.

A. P. Costigane, Secretary-Engineer of the Ontario Pulp and Paper Manufacturers' Safety Association, Toronto, spent several days last week visiting the paper mills in the Niagara district.

By a typographical error in the last issue of the Pulp and Paper Magazine of Canada in the article dealing with the presentation of the Safety trophy to the Georgetown mill of the Provincial Paper Mills, Limited, the time lost per full time worker was given as 8.5 instead of .875 days lost time per full time worker.

Arthur Jewitt, of the Montreal office, of the Provincial Paper Mills, Limited, was a visitor at the head office of the company in Toronto last week.

C. Howard Smith, head of the Howard Smith Paper Company, and First Vice-President of the Canadian Manufacturers Association, is down on the program of the annual convention of the latter organization which will be held in Toronto on June 11 when the well-known paper maker will tell of his journey last winter through Australia, New Zealand, China and Japan.

Bradshaw's, Limited, of Toronto, manufacturers of waxed paper, have just completed the purchase of a tract of land consisting of one and a half acres from the Bateman-Wilkinson Company. The property faces Symington Avenue and borders on the Canadian Pacific Railway. Active construction has started on a new building which is to be of concrete construction. The building will be 216 feet long, with one story, and of mezzanine floor type. The latest improvements and equipment known to the waxed paper business will be embodied in the building which should give the Bradshaw Company a premier standing among the waxed paper mills operating in this country. To facilitate the handling of carload freight a railway siding has been laid the full width of the building. Such features as a cafeteria and recreation rooms are being installed for the welfare of the employees. W. J. Trimble, the well known paper mill contractor, is in charge of construction and the Bradshaw Company hope to be in their new premises by Sept. 1. The Company also announce that they have just opened a sales office in Montreal in charge of W. J. Bradshaw.

The Dominion Embossing and Printing Company, Limited, Jarvis Street, Toronto, is asking for a readjustment of accounts with their creditors and have offered a compromise which will be considered at a meeting of creditors. The list of creditors includes most of the larger paper jobbing houses in Toronto, one of them having a claim for over $2,000. The liabilities are placed at $42,625.44, with nominal assets of $45,500.

Rag and waste paper dealers in Toronto are endeavoring to get the Board of Education in that city to rescind the regulation recently adopted prohibiting the scholars from collecting waste paper in the schools for school or other funds.

Mr. G. Piché, chief forester of the Province of Quebec, was a visitor to Montreal last week. Mr. C. Small, of the Laurentide Company, Grand'Mere, was also in Montreal.

C. Walmsley & Co., Ltd., Bury, England, have obtained an order for a newsprint machine for A-S Follum Traesliberi, Honefos, Norway. The machine will be equipped with a Lloyd-Hutchison drive, the engine being of the enclosed high speed Walmsley type. The machine will be the largest in Scandinavia, giving 215" of finished trimmed paper. It will run at 800 feet per minute, producing 80 tons per day.

Technical Section

REVIEW OF RECENT LITERATURE

C.—Wood Preparing and Equipment

C-O Handling of Wood Room Equipment. FRANK J. CARROLL. Paper Ind. iv. 409-411 (June 1922). Paper Mill xlv, No. 21, 22, 80, (June-3-1922) Paper **Trade J.** lxxiv, No. 23, 31, 32, (June 8, 1922); **Paper,** xxx No. 22, 20-21, 26, (Aug.-2, 1922). A discussion of the proper care of saws and of barker and chipper knives.-A.P.-C.

C-0 P-6 Safety in the Wood Room. FRANK A DRUMB. **Paper Ind.,** iv, 777,781 (Sept. 1922); **Paper Mill** xlv, No. 36, 4, 30, 32, (Sept. 16. 1922). The author recommends inculcating safety habits and methods of thinking so that it becomes second nature and not merely "grand-stand" efforts. The hot pond, circular saws, conveyors, hand barkers, splitters, chippers, cleanliness, and electrical hazards are each discussed in turn, describing the methods used at the Consolidated Water and Power Co. plant to minimize accidents. A. P. -C.

F. — Alkaline Processes of Pulp Manufacture and Equipment.

F-2 F-5 Extraction of Resin from Wood and Conversion of the Latter into Pulp. R. FABRE. Fr. Patent 538, 106, March 15, 1922 **Papier** xxv, 301-302 (July 1922). Highly resinous wood (including stumps) is chipped, extracted with a suitable solvent (preferably incombustible, such as trichloroethylene), and then pulped in the usual manner. The solvent is recovered by distillation. As the resin thus obtained has not been oxidized by the air it is superior to ordinary rosin. A. P. -C.

F-4 Continuous Causticization for Pulp Mills Provision for the Uninterrupted Recovery and Re-use of the Lime Sludge. W. D. MOUNT, **Paper Mill,** xlv, No. 36, 38, (Sept. 16, 1922); **Paper Trade J.** lxxv, No. 11, 44, (Sept. 14, 1922). A brief description of the continuous process of causticization, which requires the following special apparatus and plant; continuous causticizer, decanter, rotary filter, rotary kiln, continuous lime slaker, and auxiliaries such as pumps, etc. -A. P. -C.

F-4 G-5 Continuous Drum Filters in Pulp and Paper Mills. H. A. MORRISON. **Paper Ind.,** iv, 803, 805, (Sept. 1922.); **Paper Trade J.** lxxv,No. 11, 52-53 (Sept. 14th. 1922); **Paper Mill,** xlv, No. 36, 10, 12, (Sept. 16. 1922). Present applications of drum filters in pulp and paper mills are for caustic recovery, brown stock washing, thickening before bleaching, and deckers save-alls. Their merits for each of these purposes are briefly dwelt upon. -I. G.

F-4 G-5 Rotary Filters for the Washing of Paper Pulp and for Filtering and Washing of Caustic Lime Mud. G. D. DICKEY. **Paper Trade J.** lxxv, No. 11, 60-62. (Sept. 14, 1922). A description of the construction, use and operation of continuous filters for filtering lime mud and for dewatering stock, with a brief discussion of their merits. -I. G.

F-0 The De Vains Process for Preparation and Bleaching of Paper Pulp by Means of Chlorine DE PERDIGUIER. **Chimie et Industrie,** vii, 238-243. (Feb. 1922); Translation by A. Papineau-Couture in **Paper Ind.,** iv. 661-664, (Aug. 1922.) See Pulp and Paper xx 635, July 27, 1922. A. P. -C.

F-0 Continuous Soda Process. A. OLIER. Fr. patent 537, 038. Feb. 23, 1922. **Papier** xxv, 259-260. (June 1922). The material (grasses, etc.) is crushed, cut into short lengths, dusted, moistened with soda liquor, and fed to a digester consisting of a cylindrical shell surrounded by a steam jacket or a steam coil. The dimensions of the digester are such that the material takes 4 hours to travel through it and it is kept at the boiling temperature. It is then fed successively up through a washing tower, through a breaker, and through towers where it is treated with chlorine gas, with sodium hypochlorite, and with calcium hypochlorite and is discharged onto a wire where most of the bleach liquor is removed by means of suction. The layer of pulp is removed by a jet of water, which is then removed by delivering on to another wire. The stock is fed through the various towers by means of Archimedes' screws. -A. P. -C.

G. — Treatment of Pulp

G-5 K-4 G-Pulp Treatment and Drying — Operation and Equipment. Modern Washing System for Waste Paper Recovery Plants. ANTON J. HAUG **Paper Mill,** xlv, No. 31 4, (Aug. 12, 1922); **Paper Trade J.** lxxv. No. 8, 49-50, (Aug. 24, 1922) **Pulp and Paper,** xx, 785-786, (Sept. 14, 1922); **Paper Ind.,** iv, 799-800. (Sept. 1922). A description of a new three-cylinder washer put out by the Haug Machinery Co., with an enumeration of its merits, which are; simple to control, small power and water consumption, no special attention required, cleaner and brighter stock. -A. P. -C.

G-5 Use of the Continuous Centrifugal in the Soda Pulp Mill. J. R. KESSLER. and G. N. COLLINS. **Tech. Assoc. Papers V,** 67-68, (June 1922); **Paper Trade J.,** lxxiv, No. 22, 44-45, (June 1, 1922). Tests are described which were carried out with a 10-inch Elmore Centrifugal to remove black liquor from the pulp as it comes from the digesters. Promising results were obtained, which showed, however, that the machine as it stands is not entirely satisfactory, one of the objectionable features being knotting or balling of the fiber at the higher speeds. G. H. Elmore claims this would probably be eliminated with the larger machines.

G-11 K-13 Save-All V. ANTOINE. Fr. Patent 539-419, Apr. 1, 1922. Papier, xxv, 353 355, (Aug. 1922); **Papeterie,** xliv, 654-656, (July 25, 1922). A rotary filter drum is nearly submerged in the white water. The layer of stock which accumulates on the screen is discharged by means of a jet of compressed air, water, or steam into another chamber from which it is withdrawn in slush form. -A. P. -C.

(Continued on page 586)

UNITED STATES NOTES

The Equitable Trust Company, executor for the estate of James A. Outterson, former president of the Carthage Sulphite Pulp and Paper Company, applied last week in the Surrogate's Court, New York City, for permission to settle two claims aggregating $11,220 due to D. W. Belmet and the National City Bank of Troy on loans secured by 450 shares of the paper company. The trust company wishes to get the stock back into the estate, which so far has paid about 50 per cent. of the claims. A copy of Mr. Outterson's will, with the petition, showed he left $200,000 in trust for his wife, Eva S. Outterson, and divided the residue between her, a daughter, Eva G. Belmet, and a granddaughter, Ella M. Murphy, formerly of Carthage, received $200,000 in trust. The Carthage Free Library received $25,000.

Work on the Miami Valley flood prevention system, begun nearly ten years ago following the disastrous floods in the valley, has been completed. The enterprise, which has cost $32,000,000, consists of a number of mammoth dams, relocated highways and railroads, widened and deepened river channels, and other feats of engineering skill which natives of the community like to compare with the Panama Canal. The paper industry in the valley will benefit to a material extent by this vast impovement, not only because of the security afforded against the recurrance of serious floods, but by the greater traffic facilities available through the improved highways, river channels and rail accommodations.

Extensive damage was sustained by forest fires reported in various parts of the country the latter part of last week. The village of Pentwater, Mich., was threatened with destruction by a fire which was not put under control until practically every one in the place, even school children, joined the fire fighters. Fire in three places near Brantingham Lake, Lewis County, New York, destroyed more than 1,200 acres of valuable timber land and called for desperate efforts on the part of 500 men and youths to prevent a spread of the blaze to nearby towns and a resort colony on the lake. 400 fire fighters, under direction of District Forest Ranger Hopkins, aided by hundreds of volunteers, were put to severe tests in combatting eight separate blazes in the Adirondacks. Two of these in the Saranac Lake region were of menacing proportions. A stubborn fire, which started late Friday afternoon in the Azure Mountain timber land of the St. Regis Paper Company, about eighteen miles south of St. Regis falls, threatened serious damage. This property, chiefly valuable timber land, lies in a densely forested region, and the blaze there called for extra efforts on the part of the fire fighters to prevent irreparable loss. The conservation officers of New York State see more than a coincidence in the fact that the opening of the season of holiday travel in the Adirondacks has been immediately followed by an increased number of forest fires. The heedless tourist is seen again menacing the woods by his careless use of fire.

America's greatest forests are to be reproduced on the now barren hills of Pennsylvania, once thickly covered with pine, hemlock and a dozen other varieties of hard woods. Already the reclamation projects begun by the State, the Federal Government and large private corporations have brought under care approximately 6,000,000 acres of lands that in former years supported heavy stands of timber, and within the next few years it is more than probable that acreage will have been doubled through projects which are now partly started or in the making. Credit is being given for much of this practical effort at reforestation to Governor Gifford Pinchot, who is famed throughout the country for his work in forest conservation under the late Theodore Roosevelt. Of a total of 13,000,000 acres of land in the Pennsylvania desert surveyed by the forestry department, the State hopes to get 6,000,000 acres, including its present holdings.

The tiny dirigible balloon, equipped to war on the gypsy moth and other insect pests from the air, took off from Hammondsport, N.Y., last week for its first official flight. The dirigible was built at the request of the Department of Agriculture for use in the aid method of attack on insect tree pests. It has a gas bag capacity of 50,000 cubic feet and is capable of maintaining itself in the air for fourteen hours with three passengers. It is equipped with two motors, placed on outriggers.

The paper bag manufacturers in New York City are preparing to fight attempts to unionize their shops. There are ten or twelve large factories in this district and efforts at organizing the help have heretofore failed.

L. Oscar Lay and F. M. Lugo have formed a company to engage in the paper export business. The concern will be known as the Lay-Lugo Paper Company with offices at 29 Broadway, N. Y. Mr. Lugo was connected until recently with the export department of the American Writing Paper Company. His partner, Mr. Lay was travelling representative of the James P. Hefferman Paper Company in Latin America for more than seven years.

Articles of incorporation have been filed in Wilmington, Del. by the Old Colony Pulp and Paper Corporation. The concern is capitalized at $600,000 and states as its object the acquiring of timber lands.

Eight additional warehouses and service stations in the principal cities of the Middle West, South and Pacific Coast, have been established recently by the Eaton, Crane and Pike Company, making the total number of such branches twelve in all. Because of the increasing business and because of the establishment of these warehouses the company will authorize the issue of $1,500,000 cumulative preferred stock.

Collins S. Fuller, formerly with the wall board department of the Eddy Paper Company, has accepted the position of sales manager of the Plainfield Paper Company, Childsdale, Mich.

God blesses the home where the family altar is maintained; and if the altar has been neglected, it is not too late to get into the path of blessiing.

British Trade News

(From Our London Correspondent

London, May 22, 1923

The editorial article which appeared in the "Pulp and Paper Magazine", on April 26, (page 424), on "Anti-Canadian Propaganda" should be reprinted and circulated amongst all the paper producers of the Dominion. The writer is explanatory and he sums up the whole position, with a good insight, knowledge, and fine lucidity. Canadian exporters have been hit "below the belt" in regard to the Australian market and I hope they are not going to take the slanderous and unfair statements made about them lying down. Be it remembered, when the Australians gave the British mills the special reduced tariff, the British travellers returned home crowing over the "scoop" they made, while Canada—an integral part of the Empire, whose sons have died and bled for it — was retained in the classified list as a foreigner by the Australians. And the strange thing about the whole business is that there are more foreigners directly and indirectly connected with the British paper trade than the Australians can realize. The Australians have been "hoodwinked" and cajoled into a tariff, to the detriment of another part of the Empire, which is a disgrace to white business men. This is a subject on which we cannot mince words. If a plebicite was taken tomorrow in England on the treatment Canada has received, I vouch that the majority would be dead against the policy of the Australians. Canada's only hope now is the Imperial Trade Conference, to be held next October, and I appeal to Canadian paper men to muster their forces for it and arguments, and meet the Australians in London with a view of settling and adjusting the differences.

Canada's Friend Retires

Mr. Bonar Law, who was born in New Brunswick, has retired from the Premiership of England, and Canada loses a good friend. It was he who suggested the holding of the Imperial Trade Conference in October and I am sure if the treatment that Canada had received from Australia had come before him, as President, he would have put a different complexion on it for the benefit of Canadians. His policy was "Trade within the Empire" and as a business man he knew the meaning of those words. I may be right and I may be wrong, but I feel that the Imperial Trade Conference will lose some of its importance now that Bonar Law is gone. Therefore, Canadians must be wary; they must keep themselves acquainted with what is developing and there are trade commissioners in London paid for finding out the information for the benefit of all paper men. If these men cannot do it satisfactorily there are other sources. But leave nothing to chance.

New Machinery

Messrs. Lloyd have recently put in hand a large addition to their mill. There will be two wide and fast running paper machines with the most modern preparatory plant, embodying all the latest improvements, and the company hope to put it into operation early in 1924. The most careful study, it is stated, has been given to every detail in this new development and it is expected that the improvements will represent the highest possible efficiency and economy in the production of newsprint.

Mr. John Wolstenholme (managing Director of Chas. Walmsley & Co. Ltd), passed through London last week, after a trip to Norway and Sweden, and he announced that his firm is commissioned by the A/S. Follum Traesliberi, of Hönefos, Norway to instal a "Walmsley" paper machine, with the Lloyd-Hutchinson drive and driven by a "Walmsley" enclosed high speed engine. The machine will make paper 215 inches wide and will run at 800 ft per minute, the daily production being 90 tons.

Walmsley's are also supplying the machinery for the new pulp and paper mills in Newfoundland, which will employ between 2,000 and 3,000 hands in lumbering and in the mills. The output will reach 400 tons of newsprint a day. Power will be obtained from Deer Lake and a dam will be built to retain the Grand Lake waters.

Capturing Australia

Mr. W. L. Farrow, who presided at the annual meeting of Wiggins, Teape & Co. (1919) Ltd., in London referred to the fact that their chairman (Mr. P. Holden), had gone to Australia, at the request of the Directors, to carry out an important business commission. The company's machinery, he added, was not yet fully occupied, and they were not yet able to show more than average results. Their object was to keep prices as low as possible, but the cost of raw material had been increasing and it had only been possible to maintain the present price level owing to the expanding demand for their papers. The photographic paper branch of the company was making steady, if, rather slow, progress, the confidence in foreign papers being hard to kill. A dividend of 5 p.c., less tax, was declared on the ordinary shares.

Pulp Supplies

The imports of wood pulp from the 1st January to the 30th April, were 242,996 tons, compared with 140,506 tons for the same period in 1922. There is a notable drop in the shipments from Canada in wet groundwood. Countries supplying were:

	1922 Tons	1923 Tons	£-1923
Sweden	14,810	11,644	51,263
Norway	59,845	123,966	97,381
Canada	7,700	2,778	13,794
Other sources	505	1,547	8,345

Of bleached sulphite 7,939 tons have been imported for the four months, compared with 5,453 tons; unbleached Chemical (dry) 90,394 tons, compared with 47,364 tons; chemical wet, 1,662 tons as against 2,967 tons; and dry groundwood 3,066 tons, an increase of 204 tons over the same period in 1922.

The pulp market continues firm and buyers are just purchasing their requirements. Sellers, however, hold out no hopes of reduced prices.

A man's conversation usually reveals the principles in which he is mostly interested.

It takes a brave man to honestly face himself.

H. — Bleaching, Bleach Manufacturing and Equipment

H-5 Advantages of Bleaching Pulp at a High Density. R. B. WOLF. **Paper Mill,** xlv, No. 20, 4, 6, 7, (May 27, 1922); **Paper Trade J.** lxxiv, No. 22, 24, 26, 28, 30, (June 1, 1922). Under given conditions, with time of bleaching kept constant, the consumption of bleach and percentage of shrinkage vary directly with the temperature and inversely with the concentration of the solution. An apparatus is described in which the stock can be bleached at a concentration of 18 per cent, being delivered to the bleacher at 25 per cent and diluted to 18 per cent by the bleach liquor. The principle on which it is based is thoroughly mixing the stock and liquor at frequent intervals, which is accomplished by the longitudinal worms which act as conveyors moving the stock in a solid mass and cross worms which force the stock and bleach liquor through openings 24 inches in diameter, assuring very thorough mixing. At the plant of the Newton Falls Paper Co. the saving effected by this system is estimated at $3.99 per ton, and old hemlock which was too poor even for wrapper stock was used without culling and the resultant pulp produced a high grade exceptionally clean bond paper. -A. P. -C.

K. — Paper Manufacturing and Equipment

K-4 Process for Making Paper Pulp. G. A. MOURLAQUE. Fr. patent 540. 471, April 19, 1922. **Papier,** xxv, 356, (Aug. 1922). The wood or other vegetable material in a fine state of mechanical subdivision is subjected cold to the action of an oxidizing solution or gas for several hours; e.g., ozonized air under a pressure of 2 to 3 atmospheres, or a solution of barium or sodium peroxide treated with sulphuric acid in the presence of the fibrous material. This causes the incrustants to swell and soften up. The pulp is then broken and beaten hard, and can be used directly for the manufacture of news print or of wall paper. For the finer grades of paper, the pulp from the oxidation tank can be cooked in the usual mannar. -A. P. -C.

K-4 Mechanical Process for the Production of Cellulose from Grasses. J. J. GAHLER. Fr. patent 540, 665, April 21, 1922. Papier, xxv, 356-358, (Aug. 1922). It is claimed that certain classes of grasses (cyperaceae, gramineae, typhaceae) can be beaten (after cutting and crushing) with tackle which draws out and separates the fibres instead of cutting them so as to remove the incrusting matter, leaving pure cellulose fibers. -A. P. -C.

K-7 P-6 Safety in the Beater Room. FRANK A. DRUMB. Paper Ind., iv, 652-655, (Aug. 1922). A discussion of the hazards of the beater room and the methods of guarding against them, covering the first aid cabinet, guarding drives, defective floors, the stock chest, piling and trucking stock, and lighting and ventilation. -A. P. -C.

K-7 The Beater in Great Britain from the Engineering Point of View T. D. NUTTALL. **Paper Trade J.,** lxxiv, No. 6, 48-49, (Feb. 9, 1922). A description of the development of the beating engine, with a brief discussion of the advantages of a good circulating beater, of the effects of cutting and rubbing action, and of power consumption of beaters. -A. P. -C.

K-7 Trimbey and Tibbitts Proportioning and Metering System for Paper Stock. E. J. TRIMBEY. Can. Patent 223, 973, (Sept. 26, 1922). **Paper Ind.,** iv, 805, 807, (Sept. 1922); **Paper Trade J.,** lxxv, No. 13, 60, 64, (Sept. 28, 1922). The meter consists of a cylindrical shell with a flanged inlet at the back for connection to the pipe line, and open for about 40 per cent of the circumference on the front side for dumping. Within the cylinder is a four-arm paddle wheel or rotor with heads at each end cast integral with the hub and arms, and with shaft carried in suitable bearings and fitted with a gear for driving. A recording counter records the number of revolutions in a given time; i. e., the number of times the compartments of the meter have been filled and emptied. By using two or more meters of different sizes, in conjunction with consistency regulators, the amounts of different kinds of slush pulps, clay, size, color, etc., can be accurately proportioned and measured. -A. P -C.

K-8 K-12 The Coloring of Paper on the Paper Machine. EMIL HEUSER. **Papierfabr.,** xx, 325-331, (March 19, 1922). Translation by I. Ginsberg in Paper Trade J.,lxxv, No. 4, 49-52, (July 27, 1922), and in **Pulp and Paper,** xx, 757, 761, (Sept. 7, 1922). Description of the latest developments in coloring paper on the paper machine taken from the patent literature, more particularly representing German practice. It covers coloring by the addition of solutions of coloring matter, by means of rolls, by means of differently colored pulps, and by the action of heat. -A. P. -C.

K-8 K-12 Improvements in the Manufacture of Colored Paper and Cardboard. M. and C. CARTIAUX. Fr. patents 537, 218, Feb. 27, 1922; 537, 356, and 537 357, March 2, 1922. **Papier** xxv, 260-262, (June 1922).

537-218 — One or more colors are applied in lines, bands, etc., either separate or overlapping one another, by means of suitable color distributing devices and doctors placed at the wet end of the machine, preferably over the presses.

537, 356 — The color is applied by means of one or more perforated pipes at or near the slice which are given a reciprocating motion conforming to the shake of the wire.

537, 357 — The coloring device consists of two doctors between which is a color distributing member. As many of these as there are colors to be applied are used at the dry end of the machine. -A. P. -C.

K-8 Coloring Paper With Fast Pigments. E. ARNOULD. **Papier,** xxv, 347-350, (Aug. 1922). The author lists the fast blue, red, yellow, brown, and black coloring matters and gives practical indications as to their use to obtain satisfactory results. -A. P. -C.

K-10 K-13 The Sizing of Boards. Pappen and Holzstoff Ztg., No. 30, 1921; Translation by P. Bartholow in **Pulp and Paper,** xx, 787-788, (Sept. 14, 1922); **Paper Mill,** xlv, No. 38, 43-44, (Sept. 30, 1922). A brief discussion of the reason of the greater difficulty experienced in sizing boards than paper. -A. P. -C.

K-12 Cotton Felts and Woolen Felts. J. M. DE PORTEMONT. **Papier,** xxv, 375-377, (Aug, 1922). Experiments carried out with cotton and woolen felts are described which show that; (1) Cotton felt absorbs moisture more rapidly at first, but after it has absorbed a certain amount of water its absorbency is the same as that of wool; (2) water evaporates more readily from cotton felt; (3) the absolute moisture absorbing capacity of wool is greater than that of cotton. In paper mill practice(3) is without importance as the dryer felt never becomes saturated. A comparison of the life of cotton and woolen felts can be carried out only under actual working conditions in the mill. -A. P. C.

K-12 M-7 Have You Too Much Ventilation? J. O. ROSS. **Paper Trade J.**, lxxiv, No. 2, 47-49, (Jan. 12, 1922). A system supplying more air than is needed may be as poor as one with insufficient capacity if improperly designed and is very wasteful. Each system must be studied on its own merits and should not be copied from other successful installations as conditions may be entirely different in the two cases. -A. P. -C.

K-12 Removing Condensate from Paper Machine Dryers. PAPETERIES NAVARRE. Fr. patent 538, 812, March 24, 1922. **Papier,** xxv, 303-304, (July 1922); **Papeterie,** xliv, 653-654,(July 25, 1922). A suitably lagged pipe from each dryer is led to the bottom of a tank with an overflow, of such a depth that the height of water from the overflow to the bottom just balances the steam pressure in the dryers. If the tank cannot be made deep enough, the overflow may be raised over the top of the tank, or the pipes can be provided with a throttle or reducing valve to cut down the pressure at the well. The tank or well is well lagged to prevent loss of heat and the water is used for boiler feed. -A. P. -C.

K-14. Machine for Cutting Cigarette Paper. UNIVERSELLE CIGARETTENMASCHINEN - FABRIK j. c. MULLER & CO. Fr. Patent 539, 818, April 7, 1922. Papier, xxv, 355-356, (Aug. 1922.) -A. P. -C.

K-15 The Grinnell Dryer Applied to Wall Paper and to Coated Paper. JEROME D. STEIN. **Paper Ind.**, iv, 813, 815, (Sept. 1922); **Paper Trade J.**, lxxv, No. 11, 64-65, (Sept. 14, 1922); **Paper Mill,** xlv, No. 36, 18, (Sept. 16, 1922). A brief description of the Grinnell wall paper and coated paper dryer, the fundamental principle of which is drying by the slow movement of a very large volume of only moderately heated air, together with a discussion of its merits. The main advantages are immense saving in floor space, and drying time, fuel and power, and improvement in working conditions. -I. G.

K-19 Development of Coating Machines. W. H WALDRON. **Paper Trade J.**, lxxiv, No. 23, 47, (June 8, 1922); **Paper Mill,** xlv, No. 21, 48, 50, (June 3, 1922); **Paper,** xxx, No. 22, 16-17, (Aug. 2, 1922). Brief Historical sketch. -A. P. -C.

K-21 The Roofing Machine C. S. BIRD, Jr. **Paper Mill,** xlv, No. 21, 24, 66, 68, (June 3, 1922). A description of variations in present day practice in the manufacture of saturated roofing papers, with a plea for co-operation between the roofing and machine manufacturers for standardizing practice and design in roofing machines. -A. P. -C.

K-21 Building Material. H. W. WHITE. Can. Patent 223, 353, Sept. 5, 1922. The material consists of a thick layer of dry waste fibrous material (straw, dried grasses, dry leaves, etc.) treated with sufficient asphalt to saturate the individual fibres without filling the pores of the mass, faced on the inside with a layer of asphalt (or other suitable adhesive) and a sheet of felt or paper, and on the outside with a layer of asphalt, a sheet of impregnated paper, and another layer of asphalt coated with grit, sand, etc. A. P. C.

K-21 Shingles and Material for Making Same. A S. SPEER and L. F. LINDLEY, assignors to ROOFING PATENTS CO. Can. patent 223,401, Sept. 5, 1922. Only such portions of the felt base are coated with asphalt, sand, etc., as will be exposed to the weather A. P. -C.

M. — General Equipment

M-9 Steel Belts and Their Application to the Solution of the Conveying Problem. H. CARLSON. **Paper Trade J.**, lxxv. No. 11, 58-59, (Sept. 14, 1922); **Paper Mill,** xlv. No. 37, 26, 30, (Sept. 23, 1922). A discussion of the merits of steel belts as conveyors. (Compare CARLSON, **Pulp and Paper,** xx 773, Sept. 7, 1922.) -I. G.

M-12 Application of Recording Instruments in the Paper and Pulp Industry. L. G. BEAN. **Paper Trade J.**, lxxv, No. 11, 54-55, (Sept. 14, 1922); No. 15, 57-59, (Oct. 12, 1922). A brief discussion of the advantages of recording instruments over ordinary indicating instruments, with an enumeration of some of the uses to which they are put in pulp and in paper mills. -I. G.

N. — Power Generating and Equipment

No. 4 Evaporation test of a 1,500 H. P. Electric Plant. W. C. EDGE. **Paper Ind.** iv, 811, 813, (Sept. 1922); **Paper Trade J.**, lxxv, No. 11, 62-63, (Sept. 14, 1922); **Paper Mill,** xlv, No. 36, 14, 16, (Sept. 16, 1922). A brief description of the PBH quick-closing chain-operated water gauge,PBH quick-opening self-closing gauge cock, and PBH gauge glass protector, and of the Hays differential draft gauge, Hays gas analysis instrument and Hays CO_2 and draft recorder, together with an outline of their merits. -I. G.

N-4 Electric Steam Boilers. G. A. MAILLET. Papeterie, xliii. 485, (June 10, 1921.) Translation by A. Papineau-Couture in **Paper Trade J.**, lxxiv, No. 3, 48-50 (Jan. 19, 1922). See **Pulp and Paper,** XIX, 1175, 1197, Nov. 17 and 24, 1921. -A. P. -C.

No.4 Evaporation test of a 1500 H. P. Electric Boiler. M. C. ALLIN. **Paper Ind.**, iv, 781-782, (Sept. 1922.) Figures are given of the results of an evaporation test which showed a boiler efficiency of 94 per cent. With coal at $8 a ton and a fair boiler efficiency, if electric power were $9.35 per H. P. year steam could be produced as cheaply electrically as by coal. -A. P. -C.

CASH FOR BACK NUMBERS

Readers who can spare copies of the following numbers of the Pulp and Paper Magazine will confer a great favor by communicating with the Circulation Manager. The issues for which request are being constantly received are: — Feb. 22, March 1, 8, 22 April 12, 26, May 10, 24.

Blessed the man who, when he faces backward, as all must do sooner or later, finds no spectre in those departed years to fright him in his dreams

Never remember a favor you have shown; never forget one you have received.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 5. — Local jobbers report that business is only moderate. Apparently the falling off which is usual during the summer has set in and we may now expect that trade will be on a reduced scale for some little time. Nevertheless, general conditions are fairly good, and there is no real reason for complaint.

The pulp and paper industry, as a whole, is on a firm basis, the only danger being that of over-expansion. It is evident that there are some who believe that the industry affords further opportunities for profitable investment, and hence the report of new schemes both in pulp and paper. It remains to be seen whether the optimism of those responsible for additional ventures will be justified, but on the face of it, a policy of caution would appear to be the right one.

There is very little change in the newsprint situation. The mills report that they are very busy and that any surplus stocks are readily absorbed. Indications are that the demand will be strong for several months, due to the increasing circulation of and heavy advertising in United States papers.

In other departments business is steady. Lightweight papers are rather slow, with bonds and ledgers in moderate request. The board mills state that there is a very satisfactory call for their commodities. The paper stock market is good, orders coming in quite freely. Owing to the activity in building, roofing felts are quite firm, one or two of the mills being over-sold.

The imports of paper in Canada during April show a fairly large increase, being valued at $727,419, compared with $591,872 in the corresponding month of 1922. Our purchase of boards in April this year showed a very substantial decrease, especially in Bristol boards and blanks, but printing paper on the other hand and notably book and printing, was imported much more freely. Kraft and other wrapping paper also showed a good increase, whilst bonds and ledgers fell away, being about one-third less than in the corresponding month of 1922. We bought heavily of hangings, or wall paper, the value going up from $32,000 to $53,000. Bags decreased by about $9,000, while boxes, or containers, were up $41,000. There was a slight decrease in toilet and towels in sheets.

In the pulp market, the demand for groundwood continues good, with prices steady. As far as can be seen, there will be a good call for this for some time. Sulphite is moving slowly, with kraft selling in fair quantities. Bleached sulphite maintains its price and is being bought quite freely.

The imports of pulp during April were as follows: Soda pulp, $11,228 against $5,540 in April, 1922; unbleached sulphite $60,472 against $63,531; wood pulp, mechanical, 2,394 against $3,452.

There has been a falling off in the orders for pulpwood, although the price shows no change. The dealers expect a considerably better market in the near future.

Reports by some of the pulp and paper companies are to the effect that the drives are proceeding in a satisfactory manner, and that the delay which occurred owing to the late season has been more than made up.

Ontario Market News

A canvass of the pulp and paper situation in Ontario reveals gradually improving conditions following a period in which both the jobbers and manufacturers were inclined to complain somewhat. The bulk of May yielded only a fair amount of business, but as the month closed there were indications that there would be a much better turn-over of paper products from now until the usual quiet period sets in later in the summer. It was hoped by some that the quiet season had been advanced this year and that it has already been experienced, which, if true, would mean that the summer would swing along with a steady volume of business without the usual hot weather lull. Whether or not this is the situation the months of July and August will tell. Just now, however, a decided improvement in sales by the jobbers is taking place. For instance distributors of wrapping paper and paper bags, which have been very dull for some weeks, report that business is picking up considerably. Book, writing and bond papers are beginning to show greater activity and the same may be said of light weight papers, such as tissues, toilets, etc. The board mills are reporting increased sales to the paper box industry which is again getting busy after several weeks of light operations. It would appear as if the era of big orders, however, either by the consumer or jobber, is not yet at hand for what business exists is mostly in small lots, but these are gradually increasing in bulk, although none of the firms are stocking heavily. There has been no diminution in manufacturing operations in the Ontario paper mills and despite the fact that the jobbing and printing trades have been dull the mills have had no difficulty in disposing of their product in practically every line of paper.

PULP. — There is no change in the pulp situation. Manufacturers of sulphite are not disposing of their output readily and there would appear to be more or less of a buyers' strike on. Paper mills were paying a lower price last year and they are not inclined to buy until they are satisfied that the rock bottom has been reached. Manufacturers look for better business in June and July but in the meantime sales are light. Bleached sulphite can be had at from $85.00 to $90.00 and unbleached from $60.00 to $65.00, with newsgrade around $56.00. Groundwood pulp is very active at from $35.00 to $38.00 and paper mills are experiencing difficulty in getting it. Although water has commenced to flow there is not the quantity available this season that there was at the same time last year and the indications are for a scarcity this summer. The result is that mills that ordinarily had supplies of groundwood are not selling now. It is stated that the water in Northern Ontario was never so low as it is at the present time and that several of the big mills have been short for grinding. One of the big mills, which ordinarily had 10,000 h.p., has not more than half that amount available now and from many sources come reports of water shortage which means a groundwood shortage.

RAG AND PAPER STOCKS. — Price decreases were recorded last week in two lines of paper stocks. No. 1 mixed papers dropped from $1.20 to $1.00 and No. 2

Miscellaneous from $1.15 to 90c. per one hundred pounds. All other lines remain stationary. The demand continues heavy. Low water in some of the mill districts is causing some of the mills which normally use groundwood to look around for waste paper, although the demand thus created has had no effect upon the market as yet. In some cases it is stated that water has been so low that mills could not get on with their grinding and one of the mills is known to have sent in an enquiry to a Toronto waste paper firm for twenty-five carloads of waste paper. If more business of this character develops the waste paper market is bound to be affected although there has been no material change as yet. Considerable waste is coming from the paper box plants and if the board market keeps up increases in waste paper prices may be looked for. The rag market has been somewhat stagnant of late, although white cotton rags are in fair demand and the roofing mills are getting busier all the time.

NEW YORK MARKETS

New York, June 2 (Special correspondence)

Activity in the manufacturing branch of the paper industry keeps up on a fairly broad scale. Reports tell of most mills holding to their recent rate of production, and indications point to the papermaking plants of the country — viewed as a whole — operating on a bigger scale than is customary at just this time of the year. Some have begun to slow down a bit since inventory taking has commenced and for repairs to equipment, but aggregate production is being maintained at a better volume than ordinarily at this season.

Retail demand for paper has simmered down in numerous quarters. Consumers themselves are starting to take mid-year inventory and therefore are bent on keeping stocks of material at low levels, while the usual summer quieting of business has affected demand for paper to some extent. The movement of supplies from mills toward consumers has shown but little decrease, however. Most paper manufacturers are well provided with orders from customers, and are shipping out their product about as rapidly as it becomes available, with the result that equally as much paper is being moved from mills at present as at anytime during the past few months, and, moreover, indications are that the prevailing steady shipments from producing plants to consuming centres will keep up until at least when manufacturers have caught up better with their orders.

The latest Federal Trade Commission report shows that newsprint production in April was slightly less than that of the preceding month. Domestic mills produced 116,719 net tons of total newsprint in April, compared with 129,294 net tons in March, 114,611 tons in February, 127,452 tons in January, 111,861 tons in April last year, and an average monthly output for the past five years of 111,450 net tons. Of the 116,719 net tons of total newsprint produced in April last, 107,023 net tons were standard news, comparing with an output of 117,075 net tons of standard news in March, 105,079 net tons in April a year ago, and an average monthly output over the past five years of 101,400 net tons. April, 1923, production of total newsprint, while being somewhat under that of the several preceding months, was five per cent above an average of the past five years, while the April output of standard news was six per cent better than an average monthly production.

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Finnish Wood Pulp Union
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An encouraging feature of the Commission's report is that mill stocks of print paper declined in April. At the beginning of that month domestic producing mills held 20.180 net tons of total newsprint, while at the end of April stocks had been reduced to 18,876 net tons, which means that manufacturers shipped out every ton of their production during the month as well as a couple of thousand tons of their surplus paper. Similarly, mill stocks of standard news decreased from 15,479 net tons at the outset of April to 14,543 net tons at the close of that month.

The announcement that the International Paper Company would not revise prices on newsprint over the second half of the year has put a check on all of the trade gossip relating to an advance in print paper quotations. It is expected that other manufacturers will soon reassure publishers that they will not change prices either, and the effect of this move on the part of paper producers is likely to be a further stabilization of the market. Many in the trade contend that they do not see what is going to prevent prices on spot lots of newsprint from advancing if demand continues at the same rate of the past few months. It is stated that much difficulty is being experienced by consumers in getting spot shipments of newspaper, and that the law of supply and demand itself will make for higher prices unless demand recedes or mills increase their output.

Book papers continue in a firm position and are moving in steady tonnage. Prices display an advancing tendency though no actual changes have been noted this week. Machine finished book is selling freely at around 7 cents a pound f.o.b. New York, and it is stated that only in exceptional cases are supplies to be had at less than this figure.

Coarse papers are seasonably quiet and yet there is a fair call from consuming quarters for both wrapping and tissues. However, were it not for the movement against back orders and contracts this branch of the industry would be comparatively inactive. Quotations are steady and there is no sign of easiness in any quarter.

Fine papers are firm in price and are wanted in good amounts. Jobbers are placing orders with much regularity and seem to be disposing of shipments as quickly as received. Activity in the printing trades is of fair dimensions, which means of course that consumption of bonds and ledgers is running rather heavy.

Nothing new is recorded in box boards. Prices are characterized by a firmer tone than in some time, and it would seem as if the efforts of manufacturers to stabilize board quotations are being rewarded. Plain chip is quoted at $62.50 a ton f.o.b. New York, and news board is priced at $65 in most cases though some mills are said to be accepting orders for news at the same price as for chip.

GROUND WOOD. Current demand for ground wood is slow. Consumers appear to be fairly well supplied for the present and to be reluctant to anticipate their wants, and there is only a routine demand of small scope noted. The continued lack of important buying is affecting prices. No actual changes of consequence have been recorded this week, but there is a soft tone to quotations and indications are that buyers are succeeding in getting pulp at concessions. The main reason for the present market situation is that supplies are on the increase as a result of more favorable water conditions in grinding districts. Most consumers who operate their own grinding plants not only have their own needs provided for but also are directing some of their output into the open market, thus reducing the demand as well as affording a bigger available supply for other buyers. Reflecting this condition, the Federal Trade Commission's report on the pulp industry shows that mill stocks of ground wood increased no less than 30,000 tons during April from a total of 59,327 net tons at the beginning of that month to 89,180 net tons at the end of April. Quotations on ground wood range around $36 or $37 a ton at pulp mills for prime spruce pulp for prompt shipment, and it is stated that in some quarters purchases could probably be effected at slightly under these levels.

CHEMICAL PULP. — There is still a lack of important demand for chemical wood pulp. Dealers and importers describe papermakers as being on a "buyers' strike" and say that activity in the market is very spotty and involves at best small amounts of pulp. There is no weakening of quotations, however. Sellers seem determined to secure the full prices asked, and are mostly in an independent enough position because of light stocks to enable them to hold out for the rates quoted. With open water shipments now moving forward from Scandinavia, it is probable that some change in the market will develop shortly. Either values will soften owing to increased supplies, or else paper manufacturers will come into the market to cover their requirements and make for a stronger price situation. Importers claim to have very little stock unsold on this side of the Atlantic, and contend moreover that it is no easy matter to locate pulp available in sizeable quantities in Sweden because because a majority of Swedish producers are well sold ahead, largely as a result of the recent strike.

Prime unbleached sulphite of foreign origin is selling at 3.40 to 3.50 cents per pound ex-dock New York, and such sales of Swedish kraft pulp as are reported are invariably at a price basis of 3.35 cents on the dock. Domestic pulp quotations hold unchanged.

RAGS.—Some grades of papermaking rags are more or less neglected by buyers while others are enjoying a fairly good demand for this time of the year. New cuttings are moving only in a spotty manner and generally in small lots; similarly, roofing rags are being absorbed by consumers in limited amounts at the moment, yet old whites and thirds and blues are firm and meeting with a ready sale in numerous directions. New white shirt cuttings of No. 1 grade have been offered to writing paper mills this week at 12.75 cents f.o.b. New York, and No. 2 white shirt cuttings have actually sold at 6 cents New York. Washables, silesias, muslins and other grades of new rags are in small demand, with prices inclining lower. Roofing stock has sold down to 1.15 cents a pound f.o.b. New York for No. 2 packing and 1.25 cents for the No. 1 grade, and even at these market levels felt paper mills have been hesitant about buying. On the other had, there have been reports of sales of repacked thirds and blues of choice quality to paper mills at 3.25 cents a pound and higher, while rough blues are held by most dealers for 2.50 cents at shipping points.

PAPER STOCK. — There is but routine activity in old paper and prices exhibit a declining trend. Folded newspapers have moved down in value to about a cent per pound f.o.b. New York, and No. 1 mixed paper has sold at 80 cents a hundred pounds New York and probably at less. Flat stock is distinctly weak, and local dealers are offering heavy No. 1 magazines at 1.75 to 1.80 cents a pound f.o.b. this city. Shavings are in moderate demand though quotations are slightly lower at about 3.25 cents a pound for No. 1 soft white, and 4.10 cents for No. 1 hard white shavings. Old kraft paper continues to bring 2 cents or a trifle higher f.o.b. dealers' points.

OLD ROPE AND BAGGING. — Demand for old manila rope is no better than an average and prices are easier than has been noted in some time. Domestic manila rope is bringing no better than 6.50 cents a pound at dealers' shipping points and the probabilities are some paper mills have bought at cheaper prices. Foreign rope is quoted at around 6.25 cents ex-dock. Old bagging is quiet and nominally unchanged in price. Gunny is moving freely but in other directions than to paper mills.

TRADE COMMISSIONER TALKS AT THREE RIVERS

Mr. W. C. Egan, Trade Commissioner for Canada to South Africa, delivered a very interesting address Tuesday night to the Three Rivers Board of Trade, on the problem of exporting to the latter country. Mr. Egan made it quite clear, that while South Africa held out great possibilities to manufacturers in general, yet because of the peculiarity of the natives in carrying all their purchases, prospects for any great increase in the export of wrapping was very limited; at least in so far as the West Coast and Nigeria were concerned. The natives carry everything from a thimble to a fresh smoked ham without being wrapped.

The white settlements of Cape Town and Johannesburg present the greatest possibilities, but even here in the former city at least, the white population is outnumbered six to one.

Special emphasis was laid on the subject of packing. Wayagamack in this respect was highly commended by Mr. Egan. He stated that Wayagamack was praised, by all importers of paper, for the fine condition the bales and rolls were always in on arrival.

He touched on one other point of interest to exporters in dealing with the subject of documents. The Trade Commissioner declared that Canada was very slow in getting out the notification to the customer that the goods were on the way and giving the price, etc. Mr. Egan showed how the arrival of an invoice with the details of the shipment, ahead of, instead of after, the goods often enabled the agent or customer to sell the complete shipment before its arrival, resulting for the manufacturer in a repeat order being secured.

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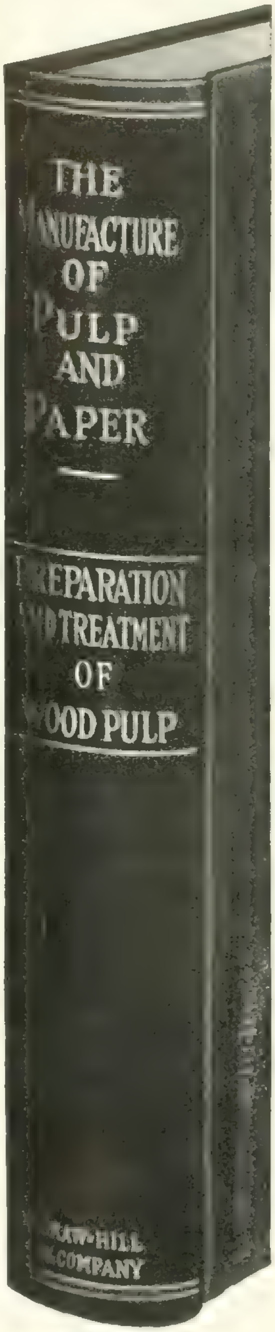

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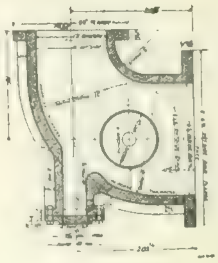

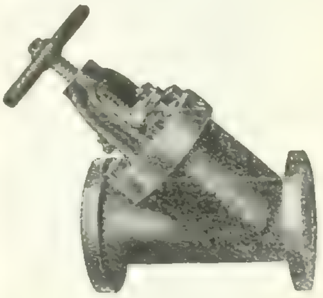

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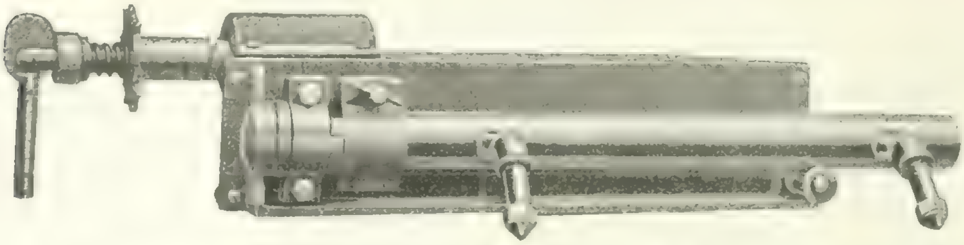

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EDITORIAL

The most important problem in Canada today is the very serious condition of the forest and the threatened curtailment of forest-born industries because of the extensive destruction of necessary raw material and decreased water power. We present in this issue, as editorials, the views of three keen thinkers on this great question.

* * *

ENORMOUS INCOME IS THREATENED

By Dr. CLIFTON D. HOWE, Acting President, Canadian Forestry Association

In the last analysis, adequate fire protection resolves itself down to the question of whether or not the people of this country wish to save their wood-using industries.

Let us look into the service of these to the country. The value of the manufactured pulp and paper products is $250,000,000 per annum. The various companies have invested in the business some $375,000,000. They employ 33,000 men in the mills and in the forest and they pay them each year $40,000,000 in wages. Isn't that business worth saving?

The value of lumber, lath and shingles produced in one year is $150,000,000. Lumber means boards and deals, dimension stock — not the finished product, as in the case of paper. I can't find just how much is added to this value by the various minor wood-using industries. With reservations, I will say that the minor industries which depend entirely upon wood, produce products to the value of $60,000,000 annually. They have an invested capital of over $50,000,000. They employ 13,000 people and pay annually in wages around $14,000,000. Is it not worth some effort to keep these industries going?

Are These Worth While?

To these should be added the industries that depend in essential part but not entirely, upon forest products. These, such as the horse-drawn and motor-drawn vehicles, produce each year products valued at $86,553,314. The capital invested totals over $65,000,000. The employes number over 9,000 to whom are paid wages amounting to nearly $12,000,000.

Going back to the lumber industry proper, we find that its invested capital reaches $250,000,000. It employs 55,000 men, and gives them $60,000,000 in wages annually. That business is worth saving too, is it not?

There are more than 100,000,000 people in Canada at work converting the forest product into wealth in some form or other. They are chiefly heads of families or the bread winners of families, thus they represent probably a half million people dependent upon the forest for a livelihood. Are they worth while in their work? Are they worth while to the country?

Must Invest in Protection

Let me emphasize that our great pulp and paper companies, the great lumber concerns will not exist many years longer unless there is more effective fire protection. In order to get more effective protection, the public must invest more money in it. When we consider the area actually under license or pulpwood concession, the amount expended on it as a whole, averages less than one per cent per acre per year. In other words we spend less than a cent an acre as an insurance rate on forest lands whose supplies at the present day yield us products to the value of $500,000,000 annually.

GOVERNMENT AROUSED AT LAST

By F. H. DEVENISH

When will Canada realize that she is annually losing millions of dollars owing to forest fires? Year after year, immense tracts of forest land are laid bare, imperilling the existence of one of our basic industries. There has been unending discussion of ways and means of perpetuating our forests, and although we are gradually improving protective measures, yet the broad fact remains that they are far from what they should be, with the result that the country is being devastated by fires such as those which occurred within the last week or two.

The Provincial and Federal Governments spend a large amount of time discussing comparatively trivial questions, and vote large sums of money for objects which, from a national point of view, are unimportant when compared with forest conservation. The destruction of forest wealth is a loss to the country as a unit, decreasing the source of employment, making capital unproductive, and reducing the amount of raw and finished products. The various companies also sustain very heavy losses, in that their supplies of raw material are seriously impaired.

In view of the ever-increasing losses, the time has surely arrived when the Federal and Provincial Governments should confer with the object of devising legislation which will minimise the enormous waste, largely preventable. No doubt the ministers of the various Governments appreciate the seriousness of the situation, but, unfortunately, the means employed are not adequate to cope with the fires. There is a lack of appreciation on the part of the public as to what this destruction means, and in that connection, the Hon. H. Mercier, the Minister of Lands and Forests of the Province of Quebec, has just issued an appeal to the citizens of the province to aid the Government in preventing forest fires. The Minister points out what the forests mean in the life and progress of the Province, emphasizing that their destruction entails loss of employment to many thousands of people in Quebec, as well as the loss of great present and still more potential wealth.

The Governments will have to face the fact that more efficient fire-fighting means greater expenditure, but after all it is an outlay which will be more than justified if it results in the saving of our forests. It will, in fact, be small when compared with the loss which would otherwise occur.

The pulp and paper industry is interested in this question to a greater extent than any other branch of commerce, and although the companies spend very considerable sums on fire prevention, it looks as if they too, will have to make larger contributions in order to protect their limits. It is obvious that the present outlay is not sufficient adequately to protect the limits. The companies, in addition to losing enormous quantities of pulpwood, are incurring heavy depreciation to the limits through the destruction of potential sources of future supplies of the raw material. Having regard to this, the companies might bring pressure to bear on the Governments in order that more stringent laws be enacted, and that the Goverments bear a portion of the necessary outlay to protect the forests. Our forests must be saved if the pulp and paper industry is to continue on the present basis.

A plainly-worded editorial in the *Quebec Chronicle* lays emphasis on the importance of taking greater precautions to prevent these fires. The article criticizes the Quebec Provincial Government for minimizing the seriousness of the situation, and declares that if the forests of the Province had to depend on the organization of the Provincial Government for protection they would be virtually at the mercy of the flames. This, we think, is an unfair statement in view of the fact that the Minister of Lands and Forests and Mr. G. Piché, Chief Forester, have over and over again pointed out the widespread nature of these outbreaks and what they mean to the Province. The writer is on safer ground when he calls attention to the non-enforcement of the law, rendered possible by the inadequate force appointment to guard the forests. He remarks that, "although a large appropriation may be necessary for the purpose, it will be no more than a drop in the bucket when compared with the almost incalculable losses in dollars and cents that is represented by hundreds of square miles of charred and barren stumps." Mr. Piché, in fact estimates that 100,000 acres of standing timber and pulpwood have been affected by the fires. As a further step of protection, the Provincial Government has decided to allow no more permits to settlers to burn slash this season until the dangerous period is over.

FOREST FIRE PERIL

By FRANK J. D. BARNJUM

Canadians have only Providence to thank for the fact that the outbreak of fires in Northern Ontario, Northern Quebec and in New Brunswick did not make a clean sweep of the forest growths in those districts. No human agency could have brought the relief which came with the providential downpour of rain. But the menace is still with us and will be until the authorities adopt much more drastic means for forest protection than they have yet done and until the public is educated to the point of regarding the forests as real wealth and treating them as such. As things are, fires are likely to recur at any time and to wipe out practically all of the timber our pulp and paper industry now depends upon for its existence, except, perhaps, the very limited amount of wood growing on the farm lots. We must not lose sight of the fact that notwithstanding the appalling losses that Canada has suffered from forest fires in the past, to-day we have the added menace of two hundred million cords of dead, dry budworm killed trees that are blowing down and piling up, forming an interminable mass of dry kindling tinder merely awaiting a period of drought and the dropping of a match or cigarette stub.

The heavy losses already sustained this season emphasize the necessity for using every available means for conserving our remaining supply of timber, and should cause the Government at Ottawa to stop temporizing with the question of stopping the exploitation of our unmanufactured wood for the benefit of foreign countries. No other country placed as Canada is would permit what amounts to the life blood of her industries to be cut down and shipped out of the country as we are doing. It is encouraging to note, from the discussions which have taken place in Parliament of late, that the members, regardless of party, are becoming alive to the situation and have expressed the view that there should be no further delay. It is sincerely to be hoped that the Government, before the session is over, will introduce a law which will give the desired relief and thereby postpone if not permanently avoid the crisis that is bound to overtake our wood-using industries if present practices are permitted to go unmolested.

Mr. J. L. McNichol, who is in charge of paper making experimental work for the Siamese Government writes that, on the anniversary of his departure from Toronto, he made the first cook of rag stock. On his arrival in Bangkok, the excavations had been started, but no one in the place knew a suction box from a press roll. He sends regards to friends in Canada.

That Technical Section meeting is surely going to be an affair that no member will want to miss.

Waste in the Generation and Use of Steam

By G. S. MARTINDALE

Works Engineer, Champion Coated Paper Company

(Paper Read Before Meeting of the Miami Valley Division of the Superintendents' Associaton, March 31, at Middletown, Ohio)

Waste in the generation and the use of steam is too generic a caption to fully cover in this discussion. I wish therefore to limit myself at the outset to those elements of waste which lie within the interests and jurisdiction of the Superintendent and Managing executive. A committee on the Federated American Engineering Societies ascribe waste in industry to the four primary causes:

First—Low production caused by faulty management of materials, plant, equipment and men.

Second—Interrupted production caused by idle men, idle materials, idle plant, idle equipment.

Third—Restricted production intentionally caused by owners, management and labor.

Fourth—Lost production caused by ill health, physical defects and industrial accidents.

Amoment's contemplation of the breadth of this subject merely as applied to the generation of steam suggests the reasons for the limitations necessarily made.

In considering the management of materials in the boiler room, coal is the prime factor. Many engineers advocate the purchase of coal upon scientific basis. This method like all other scientific methods cannot be too strongly recommended. However, the principle must be used understandingly and varied to meet all conditions. Generally speaking, coal of high B. T. U. value and low ash content should be purchased by those industries that are the greatest distance from the source of supply and those industries located nearest the source of supply can afford to use cheaper grades of coal, having smaller heat value. The mines should use the cheapest of all, the fundamental reason for this being freight costs. If costs just as much to transport coal ash as it does coal carbon.

An analysis of coal for heat value, ash, sulphur and volatiles is of great value, but it does not necessarily give a real measure of its heat value. There may exist combinations of sulphur and iron oxide which fuse into clinkers at furnace heat, resulting in much loss, due to incomplete combustion.

In the purchase of repair parts for boiler and plant equipment, it is advisable to analyze these items carefully. Whenever it is discovered that repeated orders for the same parts are made, a considerable saving can be effected by having patterns made for these parts and then purchasing castings from the foundry on a pound basis.

In considering buildings for housing boilers and prime movers, great care must be exercised in arranging and providing for the economical handling of materials at all points. It is also necessary to have complete accessibility and provide for the removal of repair parts such as boiler tubes, condenser tubes, etc. Proper ventilation is of prime importance. Working conditions for the men must be made as attractive as possible. Automatic equipment should be installed in proportion to the size and capacity of the plant.

With these preliminaries, I prefer to direct attention principally to the opportunities for eliminating waste in the operation of the boiler plant. Numerous surveys made by Government agents during the war, and by industrial engineers since, have emphasized the distressing amount of waste due to inefficient operation.

It is authoritatively asserted and proven in my own experience on several occasions that 20 per cent. of the fuel costs may be saved without spending an appreciable amount for additional equipment. This tremendous saving being accomplished through better boiler room operation. Some executives work under the impression that automatic stoker equipment does not require as much skill in its operation as the old hand fired methods. As a matter of fact, both hand firing and stoker firing is a highly skilled art and should be supervised by a man of special training. The old-fashioned idea of a man starting in as a fireman in the boiler room and working his way up into the engine room is being discarded to a greater extent each day. There are many opportunities for the combustion engineer in his own department. Possibly greater savings may be accomplished in this department than in any similar responsibility in an average plant organization.

Types of boilers and furnaces should be considered in a more technical discussion. However, it should be stated at this time that economizers pay under almost any condition if they are installed correctly, especially if we consider that they replace more than their own area of boiler surface. A rise of 11 degrees in feed water temperature before reaching the economizer or boiler will effect a saving of one per cent. of the fuel.

Effective soot blowers are almost indispensable for efficient operation. The writer has seen boiler ratings jump from 100 per cent. up to 150 per cent. for all conditions practically identical, with the exception of the installation and operation of soot blowers. Superheaters are advisable wherever power is generated. However, when steam is used directly for heating purposes, there is no economy in superheat. Superheated steam radiates energy less readily than saturated steam. A great economy can be effected in the purchase of superheat by installation of effective dry pipes so that the steam delivered to the superheaters will not contain moisture.

One of the greatest sources of waste in the boiler room is high stack temperatures. This of course indicates that heat is being lost up the chimney. Some of the causes of high stack temperature are due to maintaining too high a draft pressure over the fires, that is, furnishing excess air. An efficient combustion may be maintained with a minus pressure over the fires from 2/100 to 4/100 of an in. Boiler ratings up to 300 p. c. are often maintained regularly with a draft not to exceed 4/100. Central stations endeavor to keep excess air within from 15 to 25 per cent. of the amount required for complete combustion. Anything under 35 per cent. in industrial practice may be considered good.

The question is frequently raised as to what constitutes good practice when referring to flue gas temperatures. One authority gives us the following figures based upon 150 tests:

For 175 per cent. of rating—
550 degrees or lower—Exceptionally good results.
550 degrees to 590 degrees—Very good results.
590 degrees to 650 degrees—Good results.
650 degrees to 715 degrees—Fair results.
715 degrees to 780 degrees—Very poor results.
Above 780 degrees—Exceptionally poor results.

Making a comparison or different ratings at good results, we find that—

100% rating is—480 degrees to 520 degrees.
150% rating is—555 degrees to 605 degrees.
175% rating is—590 degrees to 650 degrees.
200% rating is—630 degrees to 695 degrees.
250% rating is—700 degrees to 785 degrees.

Flue gas temperature is a very important question and these figures may be considered as a good guide to the superintendent. It is quite possible to effect a reduction of 400 degrees F. in many plants. This will save 16 per cent. of the fuel. For every 100 degrees F. rise in stack temperatures there is a loss of 4 per cent. in fuel.

Automatic draft control is a great aid to efficient firing. Some types now on the market will control the furnace draft on a minus pressure to within 2/100 of an inch and are so sensitive that when fire doors are open they will compensate for the excess draft. This equipment may be supplemented with automatic combustion control. Hand control, however, is often preferred when more than one boiler is being operated from one fan. The design and maintenance of baffles should be carefully supervised. Frequently gases bypass straight through boiler resulting in much loss. Air infiltration in the brick walls is another large source of heat loss.

Complete combustion should take place within the furnace. When combustion is not complete in the furnace, much heat passes up the chimney, having been generated too late to become effective through the boiler heating surfaces. Retarded combustion causes high CO and promotes the depositing of slag on the boiler tubes, causing further heat losses.

In an effort to confine combustion within furnace areas, boiler settings are now made much higher than was common in earlier practice. Two and one-half to three cu. ft. of furnace volume per rated boiler horse-power for stoker driven boilers operated up to 250 per cent. of rating is now considered good practice. Volumes of from 4 to 5 cu. ft. per rated boiler horsepower are used for powdered coal.

The difficulties of perfect combustion are largely increased by the fact that ready combustion in the furnace requires a temperature of about 3,000 degrees F. The best refractive materials for use in fire-brick will withstand a temperature of only 2,200 degrees F., thus creating a condition whereby it is advisable to keep cooling off the furnace walls or radiating heat in some way to prolong the life of the side walls. Many coals often fuse and form clinkers along the side walls at these temperatures and are a considerable source of expense in maintenance. We have found the use of exhaust steam on these walls a great benefit. Side wall tuyeres for the introduction of forced draft have been used with success and counteract this tendency.

Many losses in the operation of boilers are due to results of poor firing, such as holes in the fire, lack of judgment in the spreading and feeding of fuel and maintenance of proper thickness of fire bed and the rate of dumping ash.

The condition of feed water in boilers is of prime importance. The hardness, alkalinity and causticity of the water should be controlled within reasonable limits. Excessive amounts cause scale and deposits in the boiler and the flowing over of foreign material in the steam. Priming and foaming cause slugs of water to go over in the steam, resulting in much damage and loss. The presence of cylinder oil in the feed water is the largest factor in this condition. Adequate oil separators of proven design should be installed in exhaust lines adjacent to steam engines. As there is no oil in turbine exhaust this source of trouble is eliminated by their use. Should the oil separators not be fully effective, it is then necessary to pass the condensate through an improved type of oil filter before passing the condensate to the water softening plant or feed water heaters. Large losses in heat sometimes occur from excessive blow-downs made necessary from scale deposits and precipitates formed by foreign materials in the feed water.

An effective water softening plant therefore is of prime importance. This plant should be equipped to meet the peculiarities of the local water supply. Great savings can be effected by intelligent operation, whether the zeolite continuous or intermittent lime and soda ash process are used. Hardness should be maintained under 5 grains; alkalinity at 6½ grains —causticity at around 2 to 2½ grains. Good operation will reduce these amounts materially. It should be understood at this point that all figures given in this discussion are average and may be the subject of much debate among experts.

Automatic feed water regulators are a great aid to effective efficient boiler operation. Aside from their safety features their operation results in the conserving of boiler capacity and the meeting of fluctuating load demands with greater ease and economy of fuel.

Waste in the distribution of steam may be located by examining exhaust spouts in various parts of the plant to determine the necessity for the amount of steam which may be found escaping. It will frequently be discovered that this escaping steam may be recovered and returned as condensate to the boilers. Flow meters installed on all main steam lines will afford a means of checking this loss and properly proportioning departmental costs. Much loss on steam distribution is caused because of bare pipes. All steam pipes should be insulated with the proper pipe covering, except at points where the radiated heat is desired.

Even skilled and properly trained men cannot locate all sources of waste, should intermittent observation and intuition be their only means for acquiring knowledge of their plants. It is absolutely essential in modern boiler room practice to properly equip boiler rooms with modern measuring instruments.

Flue gas analysis forms an important source of control, there being many efficient CO_2 recorders on the market.

There is a great deal of wasted heat going up the stack in the form of CO when it should have combined with additional oxygen to form CO_2. Proper air control will enable the operator to maintain an average of from 12 to 16 per cent. CO_2 when coal is used for fuel which indicates a very acceptable rate of combustion.

Boiler room instruments are vitally connected with boiler room waste. Waste means inefficiency. In order to control inefficiency, we should find means for measuring efficiency. Efficiency in its last analysis is a ratio indication of input against output. By measuring total input and total output, then properly synchronizing these records, a means may be formed by comparison for analyzing all sources of waste. Records are of value only in our ability to compare one record with another to note improvements or deteriorations. The means for acquiring a continuous record of total input and output then are of vital interest.

We have our automatic coal weighers, water weighers and meters, also steam flow meters. The difficulty lies in the fact that all these records in themselves mean but little. They should be compiled into a complete single record of total input and total output and a continuous efficiency ratio, that is pounds of steam produced per pound of coal burned. Studies of these records comparing one with another can then be made to show up all causes of inefficiency. The method of observation and studying would be to maintain all conditions between a given input and output the same with the exception of one and note the variation in results from the variation of the one cause. In this way, by a process of elimination all causes of waste may be located.

It is my judgment that automatic means for obtaining constant record of total input, total output and efficiency ratio will be demanded by the managers of industry when they realize the uses to which such records may be put. In fact, I know that such instruments are available awaiting this demand. The fundamental elements of this consideration have already made themselves felt in increased demand for measuring devices of all kinds, particularly of intergrating flow meters, which form one of the most available means for compiling this data. To this end integrators have been developed which make readings of quantity amounts of steam, oil, air, gas and water as easy to obtain as the kilowat measurements for electricity. Because of better means of measurement electricity has had other sources of power at a disadvantage for some time.

In addition to the main forest nursery at St. Williams, Norfolk county, three additional nurseries are being developed by the Ontario forest service. These are situated at "The Sandbanks" in Prince Edward county, at Orono, in Durham county, and at Midhurst, Simcoe county.

NOVA SCOTIA COAL FOR QUEBEC PROVINCE

The possibility of using the coal measures of Nova Scotia much more largely than at present to supply the needs of Quebec, and possibly part of Ontario, is engaging a good deal of popular attention just now. The reported acquisition of coal areas and the express intention of the Department of Mines at Halifix to investigate thoroughly the maximum productive capacity of the province's coal measures, lends added interest to the question. In this connection it is interesting to note the information given by Mr. F. W. Gray of the British Empire Steel Corporation before the Senate Committee on Fuel Supply in Ottawa recently.

In reply to the question as to how much coal Nova Scotia could supply for Canada's need and whether coke could take the place of anthracite Mr. Gray said, "I think there would be no difficulty at all in Nova Scotia supplying all the coal that Quebec at least, and probably Ontario, would need in the way of coke as an equivalent for anthracite. I might say I have used Sydney coke all winter at Ste. Anne's. I would rather have it—much rather— than anthracite. It is less trouble; it is less expense." Mr. Gray stated further that the coke had about the same heating value, and that he would be willing to pay more for a ton of coke than for a ton of anthracite.

In referring to the possibility of the British Empire Steel Corporation establishing by-product coke ovens in Montreal, Mr. Gray stated that the investment involved would run from three to five million dollars for a sixty-oven plant with a capacity of 1000 tons of coke a day. "Of course, the old line gas plant has been entirely superseded by the by-product coke oven. You can make better gas and more of it, and get a greater recovery of by-products from the modern by-product oven than from the old-fashioned retort gas works. They are out of date. I might say, too, that there is no comparison between gas-house coke and by-product coke. In the gass works your object is the destructive distillation of coal to obtain gas; in by-product coke your object is to get a high-carbon fuel. The coke oven has, I think, entirely superseded the gas plant where coal alone is used. Water gas is a little different."

Cape Breton coal, Mr. Gray stated, would give a 64 per cent yield of coke, two or three gallons of benzol, ammonium sulphate in unusually large quantity, and tar of peculiar value. Nova Scotia coal is known to be particularly rich in by-products. It is high in sulphur, too, but this is not an insuperable objection as it can be removed economically.

The great improvement in by-product oven practice during recent years was well illustrated in the evidence. It requires no more than 100 men to run modern ovens producing 1000 tons of coke a day, which is about one-quarter the number required with older types.

One of the most important effects of the use of Nova Scotia coal for domestic fuel, via the coke oven, would be the steadying effect it would have in the mines, Mr. Gray explained. To supply the Island of Montreal would require a million tons a year. With this to depend upon each year,the coal operators would have what they have always lacked heretofore—a dependable market. The railway contracts for coal from Nova Scotia are never certain; they are awarded to American mines if they can undercut our own mines in price, and the operators in Nova Scotia must meet these prices or lose the railway custom.

Program For Technical Section Meeting

THURSDAY, JUNE 21—

10 A. M. — Members will assemble at the Ritz-Carlton Hotel on Sherbrooke Street West, where motor busses will be provided for a trip to Ste. Anne de Bellevue.

11 A. M. — Arrival at Ste. Anne's. Inspection of Macdonald College grounds and of Garden City Press, (Home of the Pulp and Paper Magazine) and of the Institute of Domestic and Industrial Arts, under whose direction the Correspondence School in Paper-Making is carried on).

12.30 P. M. — Luncheon at the Senneville Country Club as the guests of the Pulp and Paper Magazine. After luncheon there will be one hour devoted to solid business The *piece de resistance* will be an address by Mr. J. O. Ross of the J. O. Ross Engineering Corporation of New York and Montreal on the Briner System for the elimination of moisture from machine rooms, which is creating so much interest in the industry at present.

2.30 P. M. — Trip by launch to Beauharnois, Que., where a visit of inspection will be paid to the Howard Smith Paper Mills Limited mill at that point, as guests of the company.

5 P. M. — Trip by launch back to Ste. Anne de Bellevue where train will be taken for Montreal.

8 P. M. — Dinner at the Ritz-Carlton, Montreal, as the guests of the Canadian Pulp and Paper Association.

FRIDAY, JUNE 22—

10 A. M. — Members will assemble at the Ritz-Carlton Hotel, where motor busses will be provided to convey them to Lachine, where a visit of inspection will be paid to the Dominion Engineering Works, Ltd. This Company is now constructing a 230-inch newsprint machine for the Belgo Canadian Paper Company, Limited, and a 234-inch newsprint machine for the Backus-Brooks Co.'s new mill at Kenora, Ont., and have other important paper-making and hydraulic machinery in progress.

A ROW OF NINE GARDEN CITY HOMES, GARDEN CITY AVENUE, GARDENVALE.

This visit will provide the first opportunity our members have been afforded of seeing paper machines in the process of manufacture and will undoubtedly prove both interesting and instructive.

Friday afternoon will be left free. There are many sight-seeing opportunities and other pleasurable ways of spending a summer afternoon in Montreal and its environs, details of which will be made available to visitors on arrival. Golf sticks are in order.

If you have not already advised the Secretary of your intention to attend please do so at once. A postal card only is necessary.

Hotel reservations will be made upon request.

Edward Beck, Secretary.
701 Drummond Building, Montreal.

SENNEVILLE ROAD — NEAR THE SENNEVILLE COUNTRY CLUB

ONE OF THE RESIDENCE BUILDINGS — MACDONALD COLLEGE

Pulp and Paper Exports From Scandinavia In 1920-1922

By A. E. CADMAN, Canadian Pulp & Paper Association

Some figures on the exports of Pulp and Newsprint from Canada and from Norway, Sweden and Finland.

The year 1922 witnessed a great increase in activity in the pulp and paper industry of Canada and the United States, after the depressed conditions in 1921. A similar increase took place in Norway, Sweden and Finland, the other great pulp and paper producing countries. These countries had been affected by the period of depression more than the countries on this side of the Atlantic and the keen competition they were able to offer in the world markets, particularly in pulp, prevented Canada from taking full advantage of the improved demand.

From a study of the trade returns of Norway, Sweden and Finland and other sources of information we find that the exports of various grades of pulp and paper from these countries was much greater in 1922 than in 1921 and in many cases greater than in 1920. As the pulp and paper industry in these countries relies to a very large extent upon the demand in various overseas markets, the export tonnage gives the best means of estimating the situation and the future possibilities. In this respect their situation is very similar to that of Canada with the difference that our principal market is the United States while the Scandinavian* countries have a market that is practically world-wide.

MECHANICAL PULP - - EXPORTS

Dealing first with the exports of mechanical pulp from these countries we have the following figures for the past three years: (in short tons, dry weight.)

Year	Finland	Norway	Sweden	Total
1922	56,769	224,007	167,315	448,091
1921	55,498	162,545	65,662	283,705
1920	90,309	217,987	181,675	489,971

The total exports of ground-wood from these countries were some 40,000 tons less in 1922 than in 1920. Norway was the only country to show an increase over the total for that year. The decline in Finnish and Swedish exports was mainly due to an increased domestic consumption caused by the increased production of paper.

By way of comparison with the Scandinavian figures we have the Canadian exports for the last three years which were as follows:

1922	310,415 tons
1921	223,494 "
1920	304,344 "

We have thus a total export form Canada in these three years of 838,253 tons compared with a total for the three Scandinavian countries of 1,221,767 tons.

The most important consumers of this ground-wood are the United States and the United Kingdom, while France is the principal consumer on the European continent. While we have no official records of the destination of these exports except in the case of Canada we have records showing the imports into the United States and the United Kingdom which give us a good idea of where these exports went. These are shown in the following tables in short tons dry weight.

U. S. A. IMPORTS:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	4,975	9,227	6,366	20,568	190,080
1921	13,025	23,381	17,234	53,640	136,242
1920	12,815	11,384	7,074	31,273	197,995

UNITED KINGDOM IMPORTS:

From:	Finland	Norway	Sweden	Total N. & S.	Canada
1922	x	150,483	65,289	215,773	81,008
1921	x	85,251	14,425	99,676	72,608
1920	x	170,982	47,139	218,121	49,266

x Not specified in Trade Returns.

Thus, out of a total of 2,060,020 tons exported from these four countries in the past three years, the United States accounted for 629,798 tons or 31 per cent, and the United Kingdom for 736,661 tons or 36 per cent. In other words, these two countries took over two thirds of the amount exported: (the United Kingdom's total would be increased by the addition of imports from Finland which are not separately classified).

SULPHITE PULP EXPORTS:

In the case of sulphite exports, figures are available, for all countries except Finland, under the two headings "bleached" and "unbleached". The Finnish returns classify "sulphite" only, as did those for Norway previous to 1922.

The following table shows these exports for 1920 - 1922

	Finland Blchd.	Norway Unblchd.		Sweden Blchd.	Sweden Unblchd.	Total Sulphite (Tons)
1922	137,817	128,792	70,970	73,322	684,201	1,095,102
1921	96,337	90,515		17,806	332,109	536,767
1920	66,227	233,053		48,667	586,513	934,460

Canada's exports of sulphite for these years were:

	Bleached	Unbleached	Total Tons
1922	151,048	208,445	359,493
1921	76,801	127,389	204,190
1920	100,640	281,854	382,494

The total exports of sulphite from the Scandinavian countries in 1922 was 1,095,112 tons and from Canada 359,483 tons or about one-third of that quantity. In 1921 the Scandinavian total amounted to 536,767 tons, less than one-half of 1922 exports, and the Canadian total was 204,190 tons compared with 359,493 tons in 1922.

For the three years, the total sulphite exports from Norway, Sweden and Finland amounted to 2,566,329 tons and in the same period Canadian exports amounted to 846,177 tons or almost one third of the Scandinavian total.

Details of the countries of destination of these exports are not available in very complete form, but we have a record of imports into the United States which is the market about which we are principally concerned. These are shown in the following table:

BLEACHED SULPHITE:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	6,489	43,852	46,052	96,393	136,115
1921	10,114	9,163	6,462	25,739	66,244
1920	5,969	16,650	6,656	29,275	96,253

UNBLEACHED SULPHITE:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	30,960	32,630	221,797	285,387	164,292
1921	25,148	3,513	81,836	110,497	98,687
1920	15,123	4,061	82,690	101,874	243,542

Figures for the United Kingdom are not complete, as Trade Returns do not specify sulphite imports, all chemical pulp being classified under "chemical wet" and "chemical dry". As the greater part of these imports, however, consists of sulphite pulp, we give figures for the totals. These are as follows:

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* Norway, Sweden and Finland are referred to in this article as the Scandinavian countries, although the term Scandinavian does not, properly speaking, include Finland.

From	Norway	Sweden	Finland	Other Countries
1922	59,112	191,295	48,743	61,014
1921	40,478	139,173	11,672	26,978
1920	107,947	343,425	x	104,087

x Finland included in Other Countries in 1920.

Canadian exports of sulphite pulp to the United Kingdom were:

1922	43,183 tons
1921	15,793 "
1920	51,983 "

SULPHATE PULP EXPORTS.

The exports of sulphate pulp from the various countries were as follows:

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	64,891	18,330	228,621	305,842	148,335
1921	39,091	5,000x	113,176	157,267	99,539
1920	30,658	10,000x	154,882	195,540	133,146

x Not classified separately but figures estimated.

In 1922 it will be seen that Canada's exports of sulphate pulp were practically equal to one half of the amount exported by the Scandinavian countries.

The imports of sulphate pulp into the United States for the last three years were as follows:

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	26,018	9,856	135,874	171,748	154,038
1921	8,066	3,866	64,626	76,558	100,551
1920	8,693	9,837	48,306	66,836	131,925

NEWSPRINT:

The three countries of Norway, Sweden and Finland produce about 420,000 tons of newsprint annually and of this amount the larger part is exported, the domestic consumption being less than fifteen per cent of the total tonnage produced. In 1922 the total exports of newsprint from these countries were 406,211 tons, as follows: Norway 117,728 tons, Sweden 145,132 tons and Finland 143,351 tons. It may be well here to emphasize the share of Finland in this total. That country's export last year was practically equal to the amount exported by Sweden. In 1913 Finland exported only 77,213 tons of "printing paper" which included newsprint and in 1920 the total was 99,259 tons. Thus Finland has made considerable progress in this direction and of the three countries mentioned is the one that offers the greatest possibilities for future development.

For the past three years the newsprint exports from these countries were as follows:

	Finland	Norway	Sweden	Total Tons
1922	143,351	117,728	145,132	406,211
1921	103,474	50,418	122,904	276,796
1920	99,259	84,893	128,634	312,786

Countries of destination are not given in the Trade Returns of the Scandinavian countries but the Customs Returns of the United States show the following quantities imported from these countries in the past three years together with the imports from Canada.

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	26,205	17,292	51,812	95,309	896,312
1921	22,664	20,194	48,931	91,789	656,204
1920	3,244	5,195	18,875	27,314	678,732

In addition to figures for the United States we have the records for the United Kingdom for these years which show the imports from these countries.

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	44,017	31,506	28,880	104,403	10,523
1921	38,326	9,495	29,327	77,148	267
1920	29,239	21,114	24,179	74,532	8,170

Other countries which imported considerable quantities of newsprint from Finland, Norway and Sweden of which we have records are Australia and France.

The imports into Australia were as follows:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	128	11,474	8,648	20,250	34,112
1921	937	10,009	19,037	29,983	25,188
1920	16	9,565	17,565	27,146	36,805

Those for France were:

From:	Finland	Norway	Sweden	Total N. S. & F.
1922	15,774	28,943	15,971	60,688
1921	5,849	8,492	3,837	18,178
1920	3,534	24,352	26,810	54,796

Thus out of total exports from the three Scandinavian countries of 406,211 tons in 1922; the United States, the United Kingdom, Australia and France together accounted for 280,650 tons or practically 70 per cent. Outside of those countries the principal markets for Scandinavian newsprint were Argentine, Brazil and the various South American countries. Detailed returns are not available from these countries but the Scandinavian exports to Latin America in 1922 were in round numbers, Finland 22,000 tons, Norway 16,000 tons and Sweden 21,000. The remaining tonnage exported by these countries was divided between countries in Europe, India, China and South Africa.

WAYAGAMACK SOCIAL SERVICE WORK

This progressive firm has left no stone unturned to make life enjoyable around its plant. Situated as the plant is, on Wayagamack Island, with the mill at one end, and the small artistic houses, set amongst the tall pines, at the other extremity, conditions are ideal. The cottages surrounded by their beautiful flower beds and well kept lawns, provide a picturesque setting indeed for the tennis courts and bowling green.

Year by year this company has increased its social service work, until at the present time a swimming club, tennis club, bowling green, shooting gallery, football team and the latest organization a glee club are all active. During the winter a two rink curling club is operated. In conjunction with the latter is the fine Wayagamack Curling Club House, with both piano and victrola, which forms a fine recreation room and is also the headquarters of the glee club.

The company is also adding to the natural beauty of the place. This year on both sides of the road leading to the island, trees have been planted every twenty feet, so that within a few years one of the finest driveways along a water's edge, leading to a manufacturing industry, will be the entrance to the Wayagamack Pulp & Paper Plant.

Concern is felt by some of the mills in the St. Maurice Valley, at the rapid fall in the water level due to lack of any heavy rains. This is hindering the logs reaching the St. Maurice River; jam after jam is being reported on the small tributaries, while the banks are strewn with logs.

What The Paper Mill Apprentice Did In 1823

The following is the text of the indenture of apprenticeship which was used in Scotland 100 years ago. It is taken from an exceedingly interesting historical account of papermaking in Berwickshire, which is a story of the mills of Young Trotter and Son. The period covered is from 1786 to 1923. In 1842 this firm installed its first Fourdrinier machine, made by Bertrams. The historical sketch refers particularly to the opening of the Chirnside Bridge Paper Mill, where our good friend Mr. James Home, President of the Beveridge Paper Co., Montreal worked as a paper maker, and where he obtained much of his extensive knowledge of the industry that serves him in such good stead today. The terms of the apprenticeship contract would seem hard and stringent to many of our readers, but there seems no doubt from the results that the ancient system possessed many advantages. For one thing, there was a greater sense of responsibility and pride on the part of the employee, and there was a greater personal contact and interest on the part of the employer.

A committee of the Technical Section is at work on the subject of apprenticeship in Canada's pulp and paper mills and the Pulp and Paper Magazine urges that every Management give the committee the fullest possible support in working out this very important problem of raising the qualifications of the paper mill worker.

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It is CONTRACTED AGREED and ENDED between Messrs Young Trotter and George Cranstoun Trotter carrying on business under the firm of Young Trotter and Son, Paper Manufacturers at Broomhouse Paper Mill in the County of Berwick **on the one part** and..............oldest lawful son of.............. Mill Wright at the said Mill, with the advice and consent of the said............, and the said............ for himself and as Cautioner, and otherwise bound in manner following, THAT IS TO SAY the said........ with advice and consent foresaid hereby BINDS himself apprentice to the said Young Trotter and Son their heirs and assignees in their art and employment of paper making and that for the space of Seven Years from and after the second day of May Eighteen hundred and twenty-three years which is hereby declared to be the commencement of these Indentures notwithstanding the date hereof, during which space the said..............BINDS and OBLIGES himself to serve his said Masters by night and by day and to obey all their lawful commands keep all their secrets and do not act prejudicial to their interest but on the contrary to prevent the same to the utmost of his power. And he also BINDS and OBLIGES himself that he shall not injure embezzle waste destroy or dispose of any of his Masters' money goods or otherwise, and if he does on the contrary he shall pay or cause to be paid to his said Masters double the value of the goods or effects so injured embezzled or destroyed, and that he shall not frequent any Taverns or Alehouses nor play at cards, dice or any other such games nor keep idle or disorderly company or in general be guilty of any vice or immorality by which these presents may be infringed or broken and he farther BINDS and OBLIGES himself not to buy or sell any wares or goods during the space of these Indentures that may in any ways interfere with his Masters' business, and that he shall not absent himself from his said service without leave obtained from his said Masters, and that if he fails in punctual attendance he shall serve two days after the expiration of the terms herein specified in same hours as the journeymen do and also to attend each day's absence during that time. FURTHER he BINDS and OBLIGES himself when employed at dry work to work from six in the morning till eight at night, and when employed at the Vat to work the same hours as the journeymen do—and also to attend the engines at all times when desired—and lastly it is hereby declared that in case the said............shall at any time desert or leave his said service and apprenticeship it shall be in the power of his said Masters to retain out of the money payable to him after specified the expenses incurred by them in recovering and bringing back the said............to the work as the said expense shall be ascertained by an Account signed by the said Young Trotter and Son. For WHICH CAUSES and on the other part the said Young Trotter and Son BIND and OBLIGE themselves and their foresaids faithfully to teach and instruct the said............in their foresaid trade and shall do their utmost diligence to cause the said apprentice learn the same, in so far as he is capable, and the said Young Trotter and Son BIND and OBLIGE themselves to pay to the said apprentice for the first four years the sum of four pence sterling for every felt washing in lieu of the usual sum allowed to apprentices for the purchase of Clothes, but he shall have no assistance in washing the felts—And for the remaining three years he shall be allowed at the rate of the sum of Forty Shillings sterling per annum for the purchase of his Clothes provided his conduct during such employment shall meet the complete approbation of his Masters—AND MOREOVER the said Young Trotter and Son BIND and OBLIGE themselves to pay to the said apprentice over and above the said allowance the following sums viz: When he is Fourteen and under Fifteen years of age, the sum of Four Shillings and Six pence sterling per week; When he is Fifteen and under Seventeen years of age the sum of Five Shillings and Six pence sterling per week; When he is Seventeen and under Nineteen years of age the sum of Six Shillings and Six pence sterling per week; When he is Nineteen and under Twenty and under Twenty-one years of age the sum of Eight Shillings Sterling per week; And in addition to the above sums he shall be allowed when employed at Couching the sum of one shilling sterling per week and when making the sum of one shilling and six pence per week, as extra allowance. And it is hereby declared that in case the said.... ... .shall in the opinion of his Masters be guilty of any misbehaviour, misdemeanour or disobedience it shall be in their power to dismiss him from the service without being liable for any damage or prosecution on that Account; And the said..............as Cautioner for the said..............BINDS and OBLIGES himself to pay to the said Young Trotter and Son the sum of Fifteen Pounds sterling in case the said apprentice contravenes or acts contrary to the duties incumbent on him to be performed to his said Masters during the existence of these presents, And both parties BIND and OBLIGE themselves and their foresaids to implement and perform their respective parts of the penalty of Thirty Pounds sterling to be paid by the party failing to the party observing the Indenture or willing to do so besides performance — Ad both parties consent to the registration hereof in the Books of Council and Session or others competent therein to remain for preservation; and if necessary that letters of Horning on Six days charge and all other legal execution may pass upon a decree to be interponed hereto in form as effeirs and to that effect they CONSTITUTE their procurators, etc. IN WITNESS WHEREOF these presents written upon this and the two preceding pages of Stamped paper by..............to Thomas Trotter Junior Writer to the Signet are subscribed by the said parties at Broomhouse Paper Mill the fifteenth day of April Eighteen hundred and twenty-five years before these Witnesses................overseer to the said Young Trotter and Son and................House Servant to the said Young Trotter.

(Signed)................Witness
(Signed)................Witness
(Signed)................Witness
(Signed)................Witness
(Signed) YOUNG TROTTER
(Signed) Geo. C. TROTTER.
(Signed) ....
(Signed) ....

BROOMHOUSE MILL.
First day of May 1830.

We hereby discharge this Indenture, the premises having been fulfilled by the parties to each other and we hereby subscribe our names as full discharge.

(Signed) YOUNG TROTTER
(Signed) Geo. C. TROTTER.

TREATMENT OF STRAW

A British patent has been granted to Mr. C. Weygang covering a process for treating fibrous materials. In preparing straw, particularly wheat and oat straw for paper-making and like purposes, the straw is cut up and soaked for 12 to 24 hours or boiled under low pressure for three to six hours in a mixture composed of eight parts of slaked lime mixed to a thin paste with water, one to four parts of petroleum or other refined or crude mineral oil, and four to eight parts of sodium carbonate or sulphate previously dissolved in water. Where soaking is used, the straw is piled in heaps, the excess liquor being drained off and used for a fresh lot of straw. After treatment, the material is rinsed and converted into paper in the usual way. The rinsings are used for treating straw to produce coarse paper or boards.

Fidelity to principle is the highest expediency.

NEWSPRINT PRODUCTION IN APRIL

By A. E. CADMAN, Canada Pulp & Paper Association

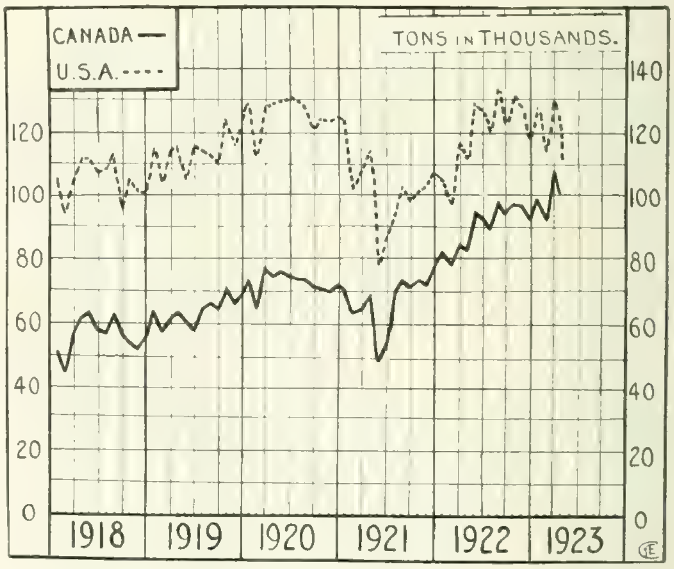
Production of newsprint in April was below the March production in both Canada and the U.S.A. due to the shorter working month; in both countries the actual daily production was greater than in the previous month.

Canadian mills produced 100,742 tons in April compared with 83,731 tons in April 1922. The proportion of the U.S. mills was 116,719 tons compared with 111,861 tons in April 1922. Total production was thus ahead of last year by 21,879 tons or 11 per cent.

During the first four months of this year production in Canada and the United States increased considerably over the first four months of 1922 and 1921, the increase in Canada being much greater than in the U.S.

The figures are:

		Canada	U.S.A.	Total Tons
Four months	1923	398,835	488,076	886,911
	1922	329,416	432,962	762,378
	1921	269,965	449,810	719,775



Canada's production in this period was greater than in 1922 by 69,419 tons or 21 per cent and greater than in 1921 by 128,870 tons or practically 48 per cent.

The average daily production of Canadian mills in April was 4,030 tons while the average daily tonnage produced by U.S. mills was 4,396 tons. For the first months of this year Canadian mills have arranged 3,910 tons daily against a daily average of 3,262 tons produced in the first four months of 1922.

KRAFT PAPER FOR PRINTING

The Pulp and Paper Magazine is just in receipt of a folder received from the Wayagamack Pulp and Paper Company illustrating the excellent effects that can be produced on a smooth finish kraft paper with carefully handled printer's ink. The sample shows the printing of a half-tone from a photograph of a woman reading a magazine. It appears to be about a 100 screen, and certainly makes a very attractive cover. It is interesting to note the strides that are being made in the application of kraft paper, as a printing paper, for covers and other purposes.

A CANADIAN'S IMPRESSION OF AUSTRALIAN TRADE

As we stated in our last issue, Mr. W. Gorman, representative in Montreal of the Provincial Paper Mills, Ltd. has returned to Canada after several months' visit to Australia and New Zealand, in the interests of his company. Below, we supplement the information which we gave last week, these particulars being given to a representative of the Pulp and Paper Magazine in an interview with Mr. Gorman. The views of Mr. Gorman will be found of timely interest having regard to the fact that Canadian paper makers are making strenuous efforts to cultivate export business in Australasia. The Canadian firms have not been content with appointing agents, but have sent out special representatives in order to study local conditions. Some time ago we gave the impressions of Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Ltd., of his visit to Australia and New Zealand. Those impressions are corroborated by Mr. Gorman.

Mr. Gorman left Canada on the 24th of November in the S. S. "Niagara," and landed in Sydney on December 20th. From there he visited the principal cities of Australia and New Zealand. Speaking on general conditions, he stated that trade was quiet in both countries, due to the fact that there are still large stocks bought at high prices during the the war period, and also to the uncertainty of world-wide affairs. Labor conditions in Australia and New Zealand were unsettled, the labor element exercising a very wide influence in both countries. Mr. Gorman found a very strong sentiment for the Mother Country prevailing. A number of representatives of British houses were making capital out of this sentiment, in order to boost their trade, using the argument that Canada was financed by American capital, and was little better than a foreign country.

In that connection, the following letter sent to the Prime Minister of the Commonwealth of Australia by the secretary of the Paper Makers' Association of Great Britain and Ireland, is of interest: "At the last meeting of the newsprint section of this association it was unanimously resolved that the best thanks of the association should be transmitted to yourself for the benefits conferred upon the paper-making industry in the United Kingdom re the application of a preferential tariff to British newsprint. It was felt by the whole of the members present that this preferential tariff, by facilitating the supply of British paper to the Australian market, thereby giving employment to workers at home rather than encouraging the industry of foreign countries, contributes greatly to bringing together the British Empire in bonds of unity and friendship." This idea, however, had been offset by recent speeches of members of the Government who had declared that Canada was to be regarded as part of the British Empire. Mr. Gorman found Australians prepared to buy Canadian products, other things being equal. With regard to the paper trade, the people of Australia and New Zealand were great readers, and consumed a large amount of paper per capita. At present it was almost impossible to sell newsprint in Australia, owing to the fact that Canada, for tariff purposes, is regarded as a foreign country. Newsprint and book-papers were subject to a duty of £3, whereas British productions of this class were admitted duty free. On writings, bonds, and other higher grades, Great Britain had also a preference, paying 5 per cent ad valorem, and Canada 15 per cent ad valorem. This difference of 10 per cent made it very difficult for the Canadian paper mills to compete with the British mills, who bought their pulp from European countries, thus indirectly benefiting really foreign countries. Mr. Gorman went on to point out that the view of the Canadian mills was that this condition was unfair, and that Canada should be placed on the same basis as the Mother Country, in view of the fact that Canada *is* part of the British Empire. In Mr. Gorman's opinion the only hope for a big development of Canadian paper in Australia is in this country being placed on the same basis as the United Kingdom.

With regard to the manufacture of paper in Australia, it was significant that the only mill manufacturing white paper had been dismantled. Australian mills made cheap kraft, chip and straw board. There was, therefore, no reason for the protection of Australian-made paper, the tariff being really a matter of revenue.

A large number of tests had been made of the pulping qualities of indigenous woods by the Forest Products Laboratory, Perth, W. A. It had been found that it was not an economical proposition to import the raw material for making pulp and paper. The following gives the result of the tests:

1. Four species of Eucalyptus, viz., Blackbutt, Coast Ash, Mountain Gum, and Spotted Gum, were submitted by the New South Wales Forestry Commission for examination in respect to their pulping and paper-making properties.

2. Autoclave pulping tests indicate that all four may be converted into good pulp, but that Blackbutt and Coast Ash are apparently the most suitable.

3. Though somewhat harder to cook than the others, Blackbutt is capable of giving a high yield and a larger digester output. The latter may amount to 75 per cent. more pulp per digester than for the commonest foreign pulp-woods.

4. Cooked under suitable conditions all the woods give pulps which are not hard to bleach, from 12 per cent to 18 per cent standard bleach being required for yields ranging from 44 per cent to 47 per cent bone-dry unbleached pulp. Loss on bleaching such pulp amounts to about 2 per cent to 3 per cent of the bone-dry unbleached pulp.

5. The idea that strong paper can not be made from Eucalyptus pulps is a mistaken one. Paper-making tests show that good quality strong paper may be made from suitably-cooked and properly-beaten pulp from any of the four woods.

6. Blackbutt seems to give a tougher fibre than the others, and with a suitable beater treatment, exceptionally strong light-weight paper may be made from it.

7. The uses to which the well-prepared bleached pulps might be put are the manufacture of writing, envelopes, typing book, magazine, and similar higher-grade printings.

8. In view of the fact that surprisingly strong paper has been made from Blackbutt and Eucalyptus pulps on a laboratory scale, it is recommended that semi-commercial scale tests be made to produce pulp in ton lots for conversion into paper on full-sized paper-machines.

The approximate cost of production and actual paper making value would be determined thereby and the prospects of commercially pulping Blackbutt at a profit could thus be ascertained.

Mr. Gorman had a good word for the Canadian Merchant Marine. He stated that Mr. Ramsay and Mr. Johnson, of the departments of the Canadian Merchant Marine and the Canadian National Railways were very active in promoting Canadian trade in Australia. They were up against very serious competition in the matter of transportation, but did their very best to overcome the difficulties. The Canadian Government Merchant Marine looked after shipments in a very satisfactory way, and Mr. Gorman found that Canadian paper arrived in Australia in excellent condition.

With regard to the paper trade in New Zealand, Canada was on the same basis as the Mother Country. Mr. Gorman believed that "the prospects for the development of our trade are very good, and, in fact, are proportionately greater than in Australia, owing to the fact that Canada is not under the same handicap in regard to tariff. New Zealand does not manufacture any white papers."

WILLIAM I. BISHOP, LTD., A BUSY FIRM

William I. Bishop, Limited, Construction Engineers Montreal, advise regarding considerable development and activity in the way of new work.

From the propositions with which they are associated might be mentioned the following.

William I. Bishop Limited are designing engineers on the hydro-electric end of the Anglo-Newfoundland Development Co., on the Humber River, Newfoundland, for Armstrong-Whitworth Limited. On this same development, they have a contract for 2,000 odd Raymond piles.

About 1,500 Raymond piles for foundation to Elevator "B", Harbour Commissions of Montreal; also piling excavation and footings for the conveyor apparatus for same.

Raymond Concrete Pile contract for foundations to Drummond-McCall's new Office building and warehouse on Wellington and Dalhousie Streets.

Raymond Concrete Pile contract for foundations to additions to Plateau Exchange for the Bell Telephone Company.

Consulting Engineers on the Quebec Development proposition at Lake St. John. They have also done considerable actual construction work in connection with this project.

They are now finishing up 13,000 H. P. hydro-electric power development for Price Brothers at Chicoutimi.

EARNINGS OF BELGO PAPER COMPANY

Figures of the earnings of the Belgo Paper Company, which were among the first to be issued since the taking over of the company by the new Canadian interests, show the following results to have been obtained.

Average annual net earnings, after liberal charges for maintenance and repairs are available for bond interest and income taxes, are as follows

Period	Output rate per annum-tons	Earnings rate per annum
Four Fiscal years ended August 31st, 1922	65,303	$1,742,570
Eight months of current fiscal year, Sept. 1922 to April 1923, inclusive 65,303 to . .	94,000	1,989,054
Two months ended April 30, 1923	94,000	2,750,000

There is nothing noble in being superior to some other man; the true nobility is in being superior to your previous self.

EVERY DAY DANGERS

The largest accident insurance companies are paying about five times as many claims to persons hurt in their homes as they are paying to persons hurt on trains or steamships. They are paying almost as many claims to persons hurt in their homes as they are paying to persons hurt in or by automobiles. There is scarcely any object with which you come in contact at home which has not been a cause of accident to thousands of persons, or which may not be the cause of an accident to you, if you are careless.

Some of the most common accidents in the home occur when persons are stepping out of the bathtub. Of course, a bath mat or rug would tend to eliminate this danger; but our bathrooms are not properly equipped unless there is a rail back of the tub—the towel rod, if solidly attached to the wall, for instance—to take hold of when getting in or out. Those who use shower baths have somewhat similar accidents.

One of the commonest accidents in the home might be considered under the head of traffic difficulties, since the person is hurt because he skids in turning a corner. These accidents are due to unsecured rugs and over-polished floors.

Every spring a number of persons break their fingers, or bruise and cut themselves in beginning the seasonal pastime of swatting flies. And there is another type of accident that is fast becoming so prominent that insurance men will tell you it is a part of the history of our time. I mean the accidents caused by "home-brews."

Serious accidents are always happening in and around the home on account of trifling emergencies. Perhaps you cannot get a painter as promptly as you desired and you decide to do the work yourself. So you mount the step ladder, and in stepping from the ladder to a window-sill you fall, thrusting your arm through the glass. But without even the excuse of a trifling emergency, you do scores of careless things every day. You open your morning newspaper with a quick movement of both hands, so that the double pages will divide in the middle. You have done it many times before, but this morning a corner of the paper strikes you in the eye, painfully injuring it.

Ordinarily, it is the woman who is reckless with inflamable and explosive cleaning materials; and usually it is a man that goes looking for a gas leak with a lighted match. This man is not a myth. Repeated warnings have not abolished this kind of foolhardiness. Probably nothing can—except the explosion he sets off with his naked light.

Infection is one of the dangerous possibilities attendant upon the most trifling accidents. We can often save ourselves from grave consequences by making it a rule to apply even to the smallest cut or scratch disinfectants recommended by physicians.—Travelers Standard.

WESTERN UNION HUMOR

One of our managers reports that a certain well-known young married man of his community burst into the office in the wildest excitement recently and wired his wife's relations as follows: "Twins today; more tomorrow!"

INSTITUTE ITEMS

Effect of Furfural on Pulp

The Institute of Industrial & Domestic Arts,
GARDENVALE, Quebec

Gentlemen:

In a recent conversation relative to the formation of pitch in cooking Sulphite from mixed Balsam and Spruce, the statement was made that the presence of furfural had a distinct effect. Would you have the kindness to let me know your opinion on the influence of this compound on chips during the process of digestion, and assuming that furfural does have a bearing on pitch formation, your suggestion as to method for elimination of it.

Yours very truly,
A. Cook.

Note: The Editor is a better waiter than cook. Perhaps some real sulphite chef, or chemist, can give this student some information; he brings up an interesting question which shows the value and need of research work.

Trouble With Wire Seam; Adjust the Suction

Editor, Questions & Answers
Pulp & Paper Magazine.

Dear Sir:-

Referring to page 528 of the Pulp & Paper Magazine for May 24, the writer notes the opportunity you have to be of practical service to one of your students.

The shrinkage of the paper may be greater with the machine than across the sheet, and to overcome this trouble the writer would suggest the following:

The formation of this sheet of paper is produced by the shake working in conjunction with the capillary attraction of the table rolls, and at the point where the seam is in the wire, there is less opportunity for this capillary suction to extract the water than there is at other parts of the sheet. Therefore, when the web carrying the mark of the wire seam reaches the first suction box, the suction box acts quickly on the seam, disarranging the fibres to such an extent that during the pressing and drying, where the shrinkage takes place this mark of weakness in the sheet becomes very pronounced.

To overcome a similar trouble a few years ago, the writer had installed in the first suction box, air cocks, thereby bringing the suction on this box in such a manner that it did not disarrange the fibre. To further overcome this trouble, he placed on the ends of the dandy rolls a piece of felt, so that the dandy rolls would operate a little slower in circumferential speed than the travel of the wire. Then also, on two and three suction boxes he arranged air cocks and regulated the suction of air on these boxes so that they accomplished the same percentage of the work, by not disarranging the fibres, as if this were done at the first suction box.

This weakness of the fibres probably is due to the quick suction at the first box instead of the wire seam, as you can readily understand that a wire seam has not the mesh that the other part of the wire has, and therefore, the fibre is more liable to fall apart under suction. To overcome this the suction must be broken to a certain extent.

If the sheet of paper is made from a very free stock, this would contribute towards the pulling apart of the stock at the suction box before the sheet is thoroughly formed.

It is necessary also that all rolls about the wires should be kept thoroughly clean, and the wire should have first class showers. In many cases in making light craft papers, the use of the Max Shower Pipe, which is in reality a moveable steam jet on the return of the wire, has proven, very effective. The use of this shower pipe two or three minutes each hour during the running of the machine will keep the wire thoroughly clean. The Max Pipe is not used in Canada to the writer's knowledge, but several firms making kraft papers and fibre papers in the United States, as well as rope papers, are using this device for keeping the wires clean, if the wire has a tendency to fill up with the chemicals which are used in the beating engines.

From every indication the suction box in this instance is the trouble maker, and by following the suggestions outlined above the sheet can be made so that there will be no difficulties at all with defects as shown in the sample.

Trusting the above will be of assistance to you, and thanking you for the opportunity of helping your students,

I remain,
Yours very truly,
Experienced.

A SHORT STORY

It is but natural that people become discontented at times, and want to change their place of employment, especially so, in the spring—we never seem to get away from the thought that the grass in some other field is just a little greener than it is at home. It might be, however, that if we were able to view our own blessings through the eyes of a stranger we would be like the farmer—who having reached middle age, and having acquired an ordinary farm of about forty acres, he and his wife decided to sell the farm and move into town, where he could work and put the proceeds from the farm out at interest. So they called in a real estate dealer and asked him to sell the place for them. He looked the place over and the following Sunday inserted an ad in the local paper.

The farmer saw the ad, and not recognizing the place described, as his own, telephoned the real estate man and told him that as soon as he had disposed of his own farm he wanted to buy the farm advertised. The real estate man, on recovering from the shock told the farmer that the farm advertised was his own. It was the farmer's turn to be surprised. He said if the real estate man would come out the next day he would settle with him for his trouble; that if the place was as good as the ad said it was, he guessed he did not want to sell.

And so it is with our jobs, if a really good advertising writer were to write up all the good things about the places we fill, run them in our local papers, half of us would be trying to get the very job that we are leaving every day.

Technical Section

REVIEW OF RECENT LITERATURE

Physical Tests and Analytical Methods

A-14.Measuring the effects of temperature and humidity on the dimensions of paper. Harold S. Davis. **Paper 31,** No. 12, 7-8, 10 (Jan. 10, 1923). A conditioning chamber was made from a glass tube 0.75 in. in diameter and 3 ft. long. Air conditioned by bubbling through sulphuric acid of known concentration at a given temperature was passed through the tube, which was surrounded by a jacket through which was circulated water at any desired temperature. Paper strips were suspended in the tube from adjustable supports at the top and were attached at the bottom to aluminum pointers so that a movement of 1 in. at the end of the pointers corresponded to a change of 0.1 per cent. in the length of the paper. Tests carried out with various grades of paper (and illustrated by curves) gave the following results: With constant relative humidity the dimensions of the papers are substantially constant, even though the temperature varies. When the absolute humidity is decreased at a constant temperature the dimensions decrease, and vice versa, but the absolute humidity alone, without consideration of temperature, does not determine the dimensions of the paper. The rate at which the paper increases its dimensions with rising relative humidity is somewhat greater than the rate at which it decreases with falling relative humidity, but the difference is not very great. The rates at which the paper changes its dimensions in a moderate current of air are fairly rapid, being nearly complete in 5 to 10 minutes. The rates are increased with rise in tem-

A-14 K-16 Wrapping Paper as used for the Shipping of Furniture. EDWARD DAHILL, Jr. **Paper Trade J.** 76, No. 7, 51-52 (Feb. 15, 1923). A discussion of the tentative specifications being put out by the Freight Container Bureau for paper used for wrapping both crated and uncrated chairs. Rope stock, 100% kraft, and 100% sulphite are the most used, their quality being in the order named. All rope paper is not extensively used because of its cost and the smallness of the supply; but the addition of some rope stock to any paper is very desirable as it increases the strength, flexibility, tearing resistance, and toughness of the paper. Kraft is preferable to sulphite and is rapidly displacing it.—A.P.-C.

A-14 L-2 Paper for Intaglio Printing. WILLY GRUENEWALD. **Papier-Ztg; Paper,** 31 No. 15, 7-8, 10 (Jan. 31, 1923). The qualities required of paper for intaglio printing are: absorbency (not excessive) combined with a certain firmness and stiffness, but no rattle. The methods of obtaining these properties with various qualities of paper are briefly described.-A.P.-C.

Barkers

C-7 Bark Removing Machine. H. L. CROUSE and C. M. JOHNSON. U.S.A. patent 1,438,904 Dec. 12, 1922. Some of the features of the barker are the arrangement of parts for simultaneously moving both the cutter and the log rest toward or from the feeding means, according to the size of the logs, by means of a single hand control; novel means for carrying and vertically adjusting the cutter head providing a unique type of rotatable gauge, for controlling the length of the cut; novel mounting of the log feeding wheels; and variable speed friction drive for these wheels.—A.P.-C.

Digesters

E-4 F-4 A New Device for Feeding Chips to the Digester. K. WESTAD. **Papir-Journalen,** 10, 6 (April 29, 1922). The device is designed to prevent choking of the conveyor when the chips do not fall into the digester. A system of steam pipes is installed, whereby steam is blown through the chips, expelling the air and causing a steady stream of chips to pour into the digester, and in half the time which otherwise would be necessary. The device works automatically, supplying 4% to 6% more chips to the digester, increasing its capacity and quantity of pulp per cook.—P.B.

Screens & Thickeners

G-6, K-11 Cylindrical Screen. CARL KURTZ-HAHNLE. Ger. patent 361,476, addition to Ger. patent 350,001. **Wochbl. Papierfabr.** 54, 397 (Feb. 10, 1923). The screen used for covering the removable sections of the cylinder is fastened on the inside of the cylinder. —J.L.P.

G-6 Screening and Refining Paper Stock. A. J. HAUG assignor to Sherbrooke Machinery Co. Can. patent 225,978, Nov. 14, 1922. The stock is first put through a knotter (U.S.A. patents 1,183,297 and 1,183,298 of May 5, 1916). The good stock is put through a riffler (Can. patent 220,545 A. J. HAUG, **Julp & Paper** 20, 791, Sept. 14, 1922; **Paper Trade J.** 75, No. 12, 51, Sept. 9, 1922), (not necessary with groundwood), then through a centrifugal screen (U.S.A. patents 1,147,239 and 1,172,239). The good stock is passed through a second riffler and then constitutes the highest grade of stock. The tailings from the centrifugal are delivered to a tailing screen (U.S.A. patent 1,248,668), the good stock being either sent to a riffler and then constituting a second grade stock, or being returned to the system at any suitable point. The rejections from the tailing screen are sent to a refiner (Can. patent 212,209, A. J. HAUG, **Pulp and Paper** 20, 1027, Nov. 23, 1922; **Paper Trade J.** 74, No. 18, 57, May 4, 1922) which converts them practically all into good fiber.—A.P.-C.

G-6 Bull Screen. J. G. DELAGE. Can. patent No. 226,658, Nov. 28, 1922. The pulp from the grinders flows onto a grating which stops the larger pieces which are suitably removed. The scraper arms of the bull screen have spray nozzles attached to them, so that water is sprayed on to the screen as the arm passes into it but the water is shut off as soon as the arm passes the screen. The outlet pipe from the vat under the screen is equipped with a rectangular valve operated by a float riding on the stock in the vat to prevent the latter from rising sufficiently to flood the screen.—A.P.-C.

G-5 Pulp Thickener. A. J. HAUG, assignor to Sherbrooke Machinery Co. Can. patent 225,977, Nov. 14, 1922. Pulp of practically any consistency is fed to the upper surface of a perforated metal cylinder (Haug, Can. patent 209,992, March 29, 1921; **Pulp & Paper** 19, 1101, 1921 and suitably pressed by means of a smooth surfaced pressure roll. The water passes through the perforated roll and can be reused, while the pulp adheres to the pressure roll from which it is removed by a doctor blade.—A.P.-C.

Paper Making Operations

K-7 Beating and its History. W. B. Campbell. **Paper Trade J.** 75, No. 26, 49-50 (Dec. 28, 1922); **Pulp & Paper** 19, 671 (June 23, 1921); **Paper Trade J.** 72, No. 24, 64, June 9, 1921 .—A.P.-C.

K-7 The Action of the Beater in Paper Making. Sigurd Smith. **Paper Maker** 64, 723-732 (Dec. 1922); **World's Paper Trade Review** 78, No. 21, 1705 & No 22, 1810; J. ROY. SOC. ARTS 71, 38-56 (Dec. 8, 1922); **Paper Trade J.** 75, No. 26, 47-48 (Dec. 28, 1922) & 76, No. 1, 49-53 (Jan. 4, 1923). The author explains in detail the so-called "fibrage theory" of beating (by "fibrage" is meant the formation of the fibers along the edge of the fly bars as they travel through the stock), and demonstrates the application of this theory in practical beater trials, as well, as its use in beater design. He also describes a duplex beater, which has been directly evolved out of the theory of fibrage, and which is provided with two bedplates located under the roll and separated from each other by a wide gap or chamber. While the flybars are passing over this gap, they gather on their forward edges a fresh fibrage which is abraded against the second bedplate. Various devices may be used for imparting a radial motion to the stock transversely across the edges of the flybars. Numerous trials have confirmed that with two bedplates in use the beating can be carried out in half the time required with a single bedplate and with a saving in power up to 40%. (See also **Paper** 31, No. 11, 17-18, Jan. 3, 1923).—A.P.-C.

K-7 Two-Roll Beater. J. E. Brothel. Fr. patent 514, 865, Nov. 19, 1920. **Papier** 24, 211 (May 1921). **Paper Trade J.** 75, No. 25 30 (Dec. 21, 1922); **Pulp & Paper** 19, 885 (Aug. 25, 1921); **Paper Trade J.** 73, No. 8, 42 (Aug. 25, 1921).—A.P.-C.

K-7 Production of Dense, Strong Paper. CARL G. SCHWALBE. Ger. patent 368,190; addition to 303,498. **Papierfabr.** 21, 82 (Feb. 11, 1923). The waste material is treated with acids or acidic substances at the same time that it is being mechanically worked, as in a kollergang.—J.L.P.

K-8 Kollergangs in the Service of the Paper Industry. ERNST. BLAU. **Papierfabr.** 21, 63-65 (Feb. 4, 1923). A general article on the kollergang with especial reference to the application of electric power. —J.L.P.

K-11 Rotary Screen. J. PARAMOR assignor to Watford Engineering Works, Ltd. Can. patent 225,398, Oct. 31, 1922. Fr. patent 544,664, June 30, 1922. The patent covers means for slowly rotating the drum (either inward-or outward-flow) and giving it a rapid vibratory motion, the two motions being independent and separately adjustable.—A.P.-C.

K-12 Electrical Sectional Drive For Paper Machines. W. STIEL. WOCHBL. .**Papierfabr.** 54, 391-395 (Feb. 1 1923). The first part of the article is concerned with a general discussion of the subject; the latter part contains working plans for poly-motor drive with compounded d.c. motors, with synchronous motors, and with d.c. motors and synchronous auxiliary motors.—J.L.P.

K-12 Electric Sectional Drive for Paper Machines. W. STIEL WOCHBL. **Papierfabr.** 54, 532-535 (Feb. 24, 1923). A discussion of polymotor drive with d.c. motors and speed maintenance by automatic regulating devices both in a mechanical and an electrical way.—J.L.P.

K-12 Wire Machine for the Production of Hand-Made Paper with Watermark. PAUL ERKENS. Ger. patent 366,810. **Papierfabr.** 21, 68-69 (Feb. 4, 1923). A cylindrical device is attached to and above shaking end of an ordinary longitudinal wire machine. This device takes up the paper stock, removes the water and couches the resulting sheet on the wire. The cylinder also may be embossed with a design for a watermark.—J.L.P.

K-12 Watermarking Finished Paper. OSWALD KOCH. Ger. patent 367,925. **Papierfabr.** 21, 83-84 (Feb. 11, 1923). The watermarking design is attached to a revolving cylinder over which the paper is passed. —J.L.P.

K-12 Device for Quickly Changing Wires. P. PRIEM. Can. patent 225,323, Oct. 31, 1922. The patent covers dences for rapidly moving out laterally the breast and table rolls and suction boxes.—A.P.-C.

K-12 Paper Machine Shake. J. ROSE assignor to C. H. SCHMEIL. Can. patent 225,537, Oct. 31, 1922. The shake rails are divided into two or more sections each one of which is shaken, the amplitude of the shake of each section being adjusted independently according to requirements.—A.P.-C.

K-12 Device for cleaning Felts of Board and paper machines during operation. Wilhelm Munker. Ger. patent 359,863. **Wochbl. Papierfabr.** 54, 249 (Jan. 27, 1923). A paddle wheel device is arranged in the washing apparatus to produce agitation of the washing liquid through which the felt is passed. — J.L.P.

K-12 Stretching device for Drying-Felts on the Paper Machine. R. Kaltschmidt and A. Kaltschmidt. Ger. patent 359,011. **Wochbl. Papierfabr.** 54 28 (Jan. 6, 1923). — J.L.P.

K-12 Dry Felt. F. Reddaway. Can. patent 225,324, Oct. 31, 1922. The felt is made from hair fibers. It is claimed to have a much longer life than cotton felt. —A.P.-C.

K-12 Felt Guide. J. A. Divine. Can. patent 225,831, Nov. 14, 1922. A sensitizing device is interposed between a swinging roll for adjusting the felt, and the end roll over which the felt passes, so that the slight frictional contact of the edge of the felt with a taper roll is multiplied to effect the movement of the adjusting.—A.P.-C.

K-12 Economy of High Speed Paper Machines. F. Strauch. **Papierfabr.** 21, 23-27 (Jan. 14, 1923). Polemic against F. A. Warburton in **Papierfabr.** 20, 778 (1922). Most of the data is taken from previous articles.—J.L.P.

K-12 Reasons for the Weight Variation of Paper. Pappers-Och Travarutid. For Finland, No. 16 265, 1922. **Papierfabr.** 21, 21-23 (Jan. 14, 1923). The following reasons are given for the weight variation in paper; lack of uniformity in the speed of the paper machine, in the consistency of the stock and in the water pressure, errors in reading the weights of paper

(Continued on page 610)

PULP AND PAPER NEWS

Mr. W. G. MacNaughton, secretary of the American Technical Association was in Montreal last week.

The Laurentide Company, Limited Grand 'Mere, have decided to extend their wood-preparing plant, and have purchased two barking drums 10 ft. x 47 ft. from the Canadian Barking Drum Company, Toronto.

News has been received in Montreal of the arrival in France, of Mr. S. J. B. Rolland, president of the Rolland Paper Company, Montreal. He will also visit Italy and England, and return to Montreal in August.

The Eastern lumber trade is still in good shape, although the orders for American account are not as numerous. Prices keep very firm for all lines, and appearances point to an active and strong market for several months. The St. Maurice Paper Company and the Wayagamack have sold their cut for export to the United Kingdom.

Mr. T. T. Ritchie has accepted a position as Sales Engineer with the Steel Trough and Machine Company Limited, Tweed, Ontario. He has held a similar position with the W. D. Beath & Son, Limited, Toronto, for several years.

Preparations are going on rapidly for the summer meeting of the Technical Section. This will be held in and near Montreal and promises to be one of great interest and enjoyment.

Charles V. Syrett, head of the Victoria Paper and Twine Company, Limited, Toronto, has returned from a business trip to Ottawa, Three Rivers, Shawinigan Falls and Grand 'Mere. While on the trip he visited several of the paper mills in Quebec.

Joseph Chevenert, sales manager for the Wayagamack Pulp and Paper Company, spent last week on a fishing trip to Lac Archangel where he landed one of the biggest catches of the season, speckled trout being his specialty.

W. H. Smith, of the W. H. Smith Co., Limited, paper merchants at Cape Town, South Africa, who is on a visit to Canada, has returned east after a trip through the Canadian West. Mr. Smith, who represents several important Canadian paper companies, was in Toronto for a few days on his way back to South Africa for which country he sails in a few days.

The committee in charge of the annual convention of the Canadian Paper Box Manufacturers' Association, which is to take place at the Clifton House, Niagara Falls, Ont., June 25 and 26, have been assured of a large attendance of the membership from all over Canada, as well as many from the United States. An excellent program of business and entertainment has been prepared and the indications are that the annual gathering will be one of the best yet held.

Heavy rainfalls throughout Northern and Western Ontario last week checked many of the forest fires that had started in various districts and which had given the forestry experts considerable anxiety. Some tracts of timber lands were burnt over in the north country but there were no heavy pulpwood losses as far as have been reported.

The Pacific Burt Company, Limited, has declared a dividend of 1 1 2 per cent on common and 1 3 4 per cent on preferred, payable in New York funds on July 3 to shareholders of record June 15.

Fred W. Halls, head of the Fred W. Halls Paper Company, Limited, Adelaide Street, Toronto, has returned from a trip to Washington where he attended the big Shriners' Convention. Mr. Halls also took in the Kiwanis convention at Atlanta, Georgia.

Brenton C. Pomeroy, representing Byron, Weston and Co., ledger and record papers, Dalton, Mass., called on the Toronto paper trade last week.

At the regular weekly meeting last week of the Toronto branch of the Canadian Paper Trade Association the Buntin Reid Company, Limited, Toronto, and the London Paper Company, Limited, London, Ont., were admitted to membership in the organization.

Samples of an exceptionally fine line of offset paper made by the Howard Smith Paper Company have been sent out by the Allan Paper Company, Simcoe Street, Toronto. The paper, which is known as "Stanwell Offset" is stocked in 25 x 38-80 and 25 x 38-100 lbs.

W. B. Carmichael, head of Carmichael and Co., of Sydney, Australia, representatives of a number of important Canadian paper concerns, was in Toronto last week. Mr. Carmichael will visit Ottawa, Montreal, New York and Chicago before sailing for home.

W. H. Sheriff, of the Hodge-Sherriff Paper Company, Melinda Street, Toronto, has returned from a successful business trip to the Pacific Coast. He reports a growing demand for kraft paper in the Canadian West where the Wayagamack products are well established.

George Gray, of the Toronto office of the Lincoln Mills, Limited, Merritton, Ont., is enjoying a holiday. His work in the Toronto office is being looked after in the meantime by W. A. Woodruff of the Merritton office.

Harold G. Dawson, of W. B. Dawson, Limited, Montreal, was in Toronto a few days last week on his way to attend a meeting of envelope manufacturers in Winnipeg.

The Ontario Government has completed the scale of a quantity of lumber lying in the waters of Lake Temagami which was caught from the blown-down timber of the Temagami forest reserve, to William Mills & Son of North Bay. They paid a lump sum of $5,250 for the estimated 217,425 board feet. The timber is mostly white pine but there is also some red pine and spruce.

Charles F. Buss, general superintendent of the Provincial Paper Co's mills at Thorold and Mille Roches, has moved his family to that town. Mr. Buss spends his time between the Mille Roches and Thorold mills.

HARMSWORTH MILLS ACQUIRE SULPHITE PLANT

St. John's Nfld., May 21. — The Anglo-Newfoundland Development Company, in maturing their plans for new developments in connection with pulp and paper manufacturing in this country, have acquired the property and plant of the Terra Nova Sulphite Company at Anglo Brook, Cloverton. This concern was started several years ago by Messrs. Blackstad and Storm for the purpose of making sulphite pulp.

PRINTERS VISIT PAPER MILLS

One hundred members of the Toronto Club of Printing House Craftsmen had their educational interest in paper making quickened last week when, as guests of the Provincial Paper Mills, Limited, they visited a number of the paper mills in the Niagara district. The party, which was marshalled by Alex. Munro, of the Southam Press, President of the Craftsmen, went over to Port Dalhousie by boat on the evening of June 8 and on to St. Catharines by a special car which remained at their disposal throughout the entire trip. On arrival at St. Catharines the party was taken charge of by T. A. Weldon, Vice-President of the Provincial Paper Mills, Limited, and F. M. H. Cushing, the company's engineer. Although the visitors were the guests of the Provincial a feature of the outing was the tour of other mills as well, to which the Provincial people secured entry, and which illustrated the excellent spirit prevailing among the paper companies in the Niagara peninsula. Following dinner at the Welland House Mr. Weldon escorted the party over to the Kinleith Paper Company's plant where Superintendent William Anderson explained the various processes as they were revealed in the manufacture of paper. On Saturday morning the visitors were paraded by Mr. Cushing, Mr. Weldon, C. F. Buss, John B. Piper and B. B. Macguire, all well known officials of the Provincial Paper Mills, and taken in the special car to Thorold where the company's plant was thoroughly inspected. The other half of the morning was devoted to an inspection of the plant of the Interlake Tissue Mills where the interesting processes of tissue and toilet paper manufacture and the making of specialty lines were displayed, then on to Niagara Falls for luncheon at the Clifton House. On the return trip to St. Catharines there was a more or less hurried inspection of the Ontario Paper Company's plant at Thorold where one of the company's boats was unloading a cargo of pulpwood. This pulpwood was trailed by the visitors from the time it left the boat until it found lodgment on the huge piles from whence some of the wood was being sent over the carriers into the grinders and on through the various processes until the final emergence as the finished paper. The visitors were greeted at the mill by Warren Curtis, the general manager, and Superintendent John Ryan. There was also a hurried call at the Lincoln Mills, Limited, plant at Merritton and then a final dinner at the Welland House in St. Catharines tendered by the Provincial Paper Mills, Limited. Here an opportunity was given the knights of printers' ink to express their appreciation of the company's courtesy which they did in a formal resolution presented by Charles Conquergood, of the Canada Printing Ink Co., Ltd., and Thomas B. Palmer of the Acton Publishing Company. To the vote of thanks Mr. Weldon and Mr. Cushing responded and with a pleasant sail back across the lake an extremely enjoyable and profitable outing was brought to a close.

BECKER & CO., LTD.

The profits of Messrs. Becker & Co. Ltd. pulp importers London, for the past year, after providing debenture and note interest amounts to £82,695 19s. 1d. Last year £23,211 2s. 6d. was carried forward, the total now reaching £105,907 1s. 7d.

Thomas Owen & Co., Ely Paper Mill, Cardiff, big producer of newsprint, have declared a dividend of 7½ p.c. less tax, on ordinary shares, making 10 p.c. for the year. The profits, after providing for taxation, etc. reached £29,449 plus £4,669 brought forward from the previous year.

SUMMER SCHOOL AT UNIVERSITY OF MAINE

The Chemistry Department of the University of Maine will conduct a summer school course in pulp and paper Chemistry and technology from June 25th to August 4th.

The University of Maine was the first institution to offer a course in pulp and paper in this country and the success of its graduates is an excellent measure of the value of such a school. The men who have graduated from this school have been unusually successful and already many of them are heads of research departments, superintendents, chief chemists, managers, etc.

The work given in pulp and paper at the summer school is designed to meet the specific needs of students who desire, and are qualified, to take pulp and paper courses and also for *pulp and paper mill* men with or without technical training, who have had practical experience and who desire to gain a scientific knowledge of important phases of pulp and paper manufacture and testing or phases of work with which they are unfamiliar.

All work completed will be given the regular University credit for either the Bachelor's or Master's degrees. Transference of credits to other institutions will be arranged for as during past years for those so desiring.

The courses which are to be offered this summer give an option of six different subjects whereas in former years only three have been given. Three courses are offered to those interested in pulp and three to those interested in paper. Anyone wishing to take part pulp work and the rest paper or vice-versa may do so providing the courses do not conflict.

Examinations for students desiring credit are held on August 3rd and 4th.

A certificate is granted upon satisfactory completion of pulp and paper courses.

Applications for admission to the pulp and paper courses should be made in person, or in writing and forwarded to the University as soon as possible.

Equipment

Adequate equipment and supplies will be available for all of the work undertaken. All necessary laboratories in Aubert Hall will be opened and special arrangements will be made for students and pulp and paper specialists to do special work, if properly qualified. Climatic conditions in Orono are unexcelled for work and recreation during the summer. The University Library, well supplied with general and reference books and periodicals on chemistry and pulp and paper will be open daily except Saturday afternoon and Sunday.

Expenses

Tuition for the session of six weeks, covering all charges for instruction, library and general laboratory use is $20.00 for residents of Maine, and $25.00 for residents of other states. For registration above fifteen recitation time hours (six credits) weekly, an additional charge of $1 per hour is made. This does not apply to pulp and paper courses where six credit hours is the maximum and will require a student's full time.

Rooms in dormitories (occupants to provide pillows, pillow cases, sheets and towels) $2.00 per week for single room, $1.00 when two persons occupy a room. Meals in Balentine Hall will be $7.00 per week. Arrangements will be made for men who come with families.

Correspondence

Correspondence concerning chemistry and paper courses should be addressed to C. A. Brautlecht, Chemistry Department, University of Maine, Orono, Maine.

Application for rooms and general information should be sent to Dean J. S. Stevens, Director of Summer Ses Department, University of Maine, Orono, Maine.

samples on the quadrant scale, and error in the regulating mechanism on the machine.—J.L.P.

K-12 Production of Dense, Strong Paper. CARL. G. SCHWALBE. Ger. patent 368,189; addition to 303,498. **Papierfabr.** 21, 82 (Feb. 11, 1923). The moist shect, containing pulp mucilage, is subjected to a high pressure and dried at a moderate temperature.—J.L.P.

Special Papers, Etc.

K-23 Paper with a Foam-Like Effect. FARBWERKE V. MEISTER LUCIUS & BRUNING. Ger. patent 368,258, **Papierfabr.** 21, 83, (Feb. 11, 1923). To produce this effect a water- soluble, amorphous, condensed sulphur-containing compound of an aromatic nature is used.—J.L.P.

K-23 Process for the Production of Dense, Hard Paper C. G. SCHWALBE. Ger. patent 366,322, **Papierfabr.** 21, 13 (Jan. 7, 1923). Additional density and strength, together with improved sizing, are obtained by adding "protective colloids," as plant mucilage, glue, casein. etc., to colloidal plant mucilage mentioned in Ger. patent 303,498 for the production of dense, hard paper.—J.L.P.

K-23 Production of Transparent Paper for Window Envelopes, Etc. GEORGE BERGMANN. Ger. patent 366,811. **Papierfabr.** 21, 69-70 (Feb. 4, 1923). Transparent paper is made directly on the paper machine The process requires two longitudinal wire machines. —J.L.P.

K-23 Production of White or Variegated Shaded Paper or Board. RINGE & CO., Ger. patent 367,868. **Papierfabr.** 21, 71 (Feb. 4, 1923). Glue or starch products are used in the process as binding materials after being subjected to a very intimate mixing.-J.L.P.

K-23 Production of Color Mixtures Containing Oils, Fats, or Waxes in an Unsaponified Condition for the Manufacture of Marbled or Glazed Paper and the Like. RINGE & CO. Ger. patent 367,805. **Papierfabr.** 21, 71 (Feb. 4, 1923). The color mixture containing oils, fats, or waxes and a color is subjected to a very intimate mixing process,—J.L.P.

K-23. Machine for Drying Blue-Print Paper. B. J. Hall. Can. patent 224,779, Oct. 17, 1922. The sensitized paper is dried by passing it over a suitably heated (hot water, steam, gas, or electricity) convex, smooth-surfaced body, the uncoated surface of the paper being in contact with the hot surface.—A. P. C.

K-23 Process for the Production of Transparent and Fadeless Japanese Rice Paper. CARL SCHUMANN. Ger. patent 366,505. **Papierfabr.** 21, 46 (Jan. 21, 1923). Rice paper is treated with a mixture of dilute color paste containing glycerine, castor oil, gum arabic, and an aniline dye.—J.L.P.

L. — Articles Produced from Pulp and Paper

L-4 Paper Cup and Method of and Apparatus for Making Same. G. J. BOHLMAN, assignor to American Water Supply Co. Can. patents 225,109 to 225,114, inclusive, Oct. 24, 1922.— A.P.-C.

L-4 Paper Cups and Vessels. R. HOLMAN, assignor to Vortex Manufacturing Co. Can. patent 225,207, Oct. 24, 1922.—A.P.-C.

L-7. Production of Material Suitable for Spinning from Disintegrated Birds' Feathers. Martin Jonas. Ger. patent 364,567. **Papierfabr.** 21, 14 (Jan. 14,1923.) grated in a mechanical way.—J. L. P.

L-7 Wood Fiber Yarns and Fabrics. R. W. SINDALL. **J. Textile Inst.** 13, 133-139 (1922); **Chem. Abs.** 16, 4353 (Dec. 10, 1922). The cutting off of jute importations to Germany and Austria during the war resulted in the opening of more than 500 paper yarn factories by the end of 1917. Short accounts are given of the different inventions for converting wood to wood pulp and the latter to yarns. The effect of spinning on strength and elongation is shown by the following figures: plain dry pulp strips, breaking length 4,170 m., elongation 2.84%; rolled cylindrical 5,180 m., and 2.71%: rolled and twisted 6,410 m. and 3.06%. In general finished fabrics from wood pulp have about half the strength of jute fabrics of the same make and weight. During the past few years the activities of the manufacturers have been devoted to the improvement of the year in the direction of durability, water-resistant properties and tensile strength by the treatment of the pulp or yarn with various chemicals before spinning or twisting. Tannin fixed with gelatin increased the tensile strength about 25% and when fixed with aluminum acetate the increase was 44%.—A.P.-C.

L-0 Paper Towels. A. EK. assignor to BROWN CO. Can. patent 226,092, Nov. 14, 1922. The towels are made from sulphate pulp which is digested in such a way as to leave a small quantity of saponified resin in the interstices of the paper.—A.P.-C.

General Equipment

M-12 A Continuous Specific Gravity Recorder. P. W. CODWISE. **Paper Trade J.** No. 20, 54-56 (Nov. 16, 1922) The author describes a new type of continuous recording instrument (invented by S. D. Wells) designed to record the specific gravity of liquids, which operates on the principle of weighing a constant volume of the solution and recording this relative weight as a continuous operation. A detailed survey has been made of the application of this machine to the specific problem of giving accurate records of the Beaumé test of the tub sizing solution used in the manufacture of fine papers. The various difficulties encountered and the methods of overcoming them have been detailed. It is concluded that this instrument is a valuable contribution to the scientific control of many manufacturing processes and of distinct interest to those concerned with the management of the same. —A.P.-C.

Standardization

R-0 Tentative Report on Paper Standardization. Paper Trade J. 75, No. 11, 38, 40, 42 (Sept. 14, 1922). Text of the tentative report submitted by the technical committee appointed by the U. S. Bureau of standards, covering specifications of quality, testing of paper, sampling of paper for test, and tolerances.--A.P.-C.

R-0 Report on Simplification of Page Sizes. Paper Trade J. 75, No. 19, 36, 38, 40, 42 (Nov. 9, 1922). Text of the report of the committee appointed by the U. S Bureau of Standards.—A.P.-C.

SIR W. PRICE MAY JOIN RIORDON BOARD

Quebec, June 8. — (Star Special). — It is stated that Sir William Price is to become a director of the Riordon Company which is now being reorganized. To what extent the Price Brothers' interests will enter in the combination, however, could not be ascertained.

UNITED STATES NOTES

According to an estimate covering the three months ended May 31, the International Paper Company added to its surplus after all charges and preferred dividends slightly less than $800,000. With no break in current rate of operations for six months ending June 30, the company will probably earn better than $6 a share on 199,230 shares of common stock. Despite the increase in wages voluntarily granted to mill employees this spring, with mills continuing operations at capacity as at present, the company should be able to show net profits available for dividends on preferred stock of at least $350,000 monthly for the balance of the year. Preferred dividend requirements amount to $125,000 monthly, or $1,500,000 for the year. This would be at an annual rate of between $13 and $14 a share on common stock, though due in part to inclusion of income from other sources.

The methods and procedure used to obtain a light weight paper which is free from electrical conducting particles are summarized in a report of the paper division of the United States Bureau of Standards. This bulletin describes the manufacture of condenser paper for power condensers.

Paper manufacturers of Holyoke, Mass., have turned down the demand of the papermakers of the vicinity for an increase in wages approximating 10 per cent together with propositions involving abolition of Saturday night work and a guarantee of a certain number of days' work each week. The unions in turn threaten drastic action unless the demands are conceded.

The annual convention of the American Pulp and Paper Mill Superintendents' Association, held at Springfield, Mass., May 31, June 1 and 2, while not as large in point of attendance as the meeting at Kalamazoo last year, proved in every other way more successful than any previous gathering of the association. About 400 members were on hand at the opening session, and these were joined on the succeeding days by a number of men identified with various other branches of the paper and allied industries. A letter from Philip T. Dodge, president of the International Paper Company, led to the formation of a newsprint section of the organization. A sizable increase in membership is looked for as a result of this action. A report of the convention was printed in the Pulp and Paper Magazine last week.

John Strange, a pioneer paper manufacturer and business man of the Fox River Valley, died suddenly of heart disease while addressing a Wisconsin Rotary Club, May 28. Mr. Strange, who was 71, headed the John Strange Paper Company and the John Strange Pail Company of Menasha, and the Stevens Point Pulp and Paper Company of McGill. He is survived by two sons and two daughters.

J. T. Potter, J. B. Stebbins and F. J. Barber of North Adams, Mass., Albert A. Frederick of the J. A. DeVito Company and G. O. Dudley of the Sears Roebuck Company, Boston, are back of the Vermont Power and Paper Company just incorporated in Massachusetts to develop a paper and power business in Pownal, Vt. The new concern has an authorized capital of $350,000. A paper mill with a capacity of 25 tons a day is being erected at Pownal.

Paul L. Brownie, comptroller, and Henry L. Cassidy, statistician, have tendered their resignations to the officers of the American Writing Paper Company. Mr. Brownie has not indicated his plans for the future. Mr. Cassidy may locate in New York City. L. S. Nold, recently appointed treasurer of the company, will probably take over the duties vacated by Mr. Brownie.

The Great Southern Lumber Company of Bogalusa, La. is looking about for an addition to its plants. W. H. Sullivan, president and other officials have just been inspecting Warrior river sites with the view to erecting a great paper manufacturing and lumber plant on its banks.

Judson G. Rosebush, president of the Patten Paper Company and director in several other paper mills in the Middle West, has writen a book entitled, "The Ethics of Capitalism." This is a discussion of the central issues in the industrial problem from the viewpoint of one who is both a capitalist and a trained sociological student.

At the weekly meeting of the Salesmen's Association of the Paper Industry, held June 4 in the rooms of the new Forest Industries Club, Pershing Square, N. Y. plans were formulated for the fall convention of the Association, scheduled for Chicago, beginning October 9. Fred P. Whitely of the Howard Paper Company has been made chairman of the general committee on arrangements.

Arrangements are under way for the convention of the Cost Association of the Paper Industry and tentative plans just made call for the selection of Philadelphia and a date some time early in the fall for the event. An arrangement committee comprising mill representatives from various localities has been appointed.

Fire in the plant of the P. H. Graham Paper Company, Boston, June 2, caused damage to the extent of about $50,000.

The northeastern division of the American Pulp and Paper Mills Superintendents' Association held its annual meeting last week at the Bangor House, Bangor, Me. Business sessions, a banquet and visits of inspection to nearby paper plants comprised the program. B. T. Larrabee of the S. D. Warren Paper Company, Cumberland Mills was elected chairman and W. D. Sommerville of the Eastern Manufacturing Company was chosen secretary and treasurer. Groveton, N. H. was selected as the place of meeting for the fall get-to-gether some time in October.

The Berkshire local division of the Cost Association of the Paper Industry meets on June 26 at the Irving House, Dalton, Mass. Under the direction of President Wm. W. Howe, this division has held very successful meetings monthly during the past season and the work has been of material benefit to the cost accountants in the section.

C. R. McMillen, vice-president of the Union Bag and Paper Company, who is also a director of the St. Maurice Paper Company, gave out a statement in New York last week branding as gossip the report that either of the two companies was to figure in a consolidation. The rumor, he said, probably originated from a transaction involving the purchase of the Belgo Paper Company by a syndicate of New York and Canadian bankers.

The New Jersey Department of Agriculture is waging a successful fight against the gypsy moth. In three years the egg masses found in the entire State have been reduced from 3,000,000 to 1,140. The last figure was reported about a week ago when the scouting work for the present season was completed. This great depletion has been brought about through creosoting the egg masses, which kills the eggs.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 12.—Although the local paper trade is not brisk as during the last two months, it is still on a fair basis. Some jobbers report a moderate amount of activity, while others state that business is dull. One generally looks for a falling off in the summer (if we can so describe the present season) as the printing industry slackens, thus curtailing the demand. The reports from the mills are to the effect that orders are coming in at a satisfactory rate, and that prospects are good.

Taking another aspect of the pulp and paper industry, it may be pointed out that the companies have incurred severe losses owing to the recent forest fires, and the destruction, if continued, must reflect in the cost of the products. No concern, however well managed and however strong financially, can aftord to have its source of raw materials depleted to such a serious extent without being affected.

During the week the newsprint situation has undergone a slight change. Owing to seasonable reasons, the demand for surplus production has eased although there is still a very strong call for paper. Spot prices are inclined to be softer. The output of both Canadian and American mills continues to be at a high rate, but according to one authority, it would not be surprising if some of the American converting mills were forced into other lines, owing to the price of groundwood, which leaves little or no margin of profit on newsprint at the prevailing price.

The board market is inclined to be less satisfactory than it was. Apparently the American demand has slackened, and as is usually the case when business drops in this section, an outlet, particularly now for patent coated, is being sought in Canada, at prices under the usual quotations, this is bound to have an effect on the Canadian industry, which has previously suffered from the offerings of boards at low figures.

The pulp market remains practically unchanged. Groundwood continues firm, although the demand is slightly lowered. Sulphite is a dull spot, with bleached on the old basis, the demand remaining good. The recent forest fires, in addition to destroying a large amount of pulpwood, burned 3,000 tons of pulp at Chicoutimi, stored on the wharf ready for shipment. The Bay Sulphite Company at Port Alfred, P. Q., also lost their wood-pile, containing about 12,000 cords of pulpwood. The loss is fully covered by insurance.

It is reported that an American company have under consideration the construction of a sulphite mill in Nova Scotia.

Toronto Market News

Although June has not opened up with any great rush in pulp and paper circles there appears to be good reason for belief that the present month is going to produce much better business than May. Many producers and jobbers profess to see the end of the dull period and believe that from now on there will be greater activity in all paper lines. Certain it is that there is a much better tone to market conditions generally, although it is admitted that there is room for improvement as far as the distributing end of the trade is concerned. Some of the wholesale paper merchants are complaining that sales are still light while others, after casting up their accounts, discovered that May sales were up to those of the previous month and that sales are gradually increasing. That paper consumption is gradually increasing after a rather quiet month or two is the testimony of many in the trade while the outlook generally is viewed with optimism. The board mills, for instance, report better sales to the paper box trade which is picking up again, and it is believed that the container industry is in for a period of expansion. In Toronto alone several paper box factories are either on the way or being projected, which augurs well for the future of the board business. Manufacturing stationers and other branches of the converting end of the paper business are fairly busy and report considerable business in sight. One branch of the paper trade that is really busy is that of flour sack manufacturers, mills making this line being several months behind in their orders. This, of course, is the busy season in that department. Prices on wrapping paper, paper bags, tissues, toilets, parchment papers, etc. remain firm and no change is looked for in any of these lines for some time. Manufacturers and dealers in the papers mentioned say there is a gradually increasing demand for them and that on the whole they have little to complain of now that the turn of the tide appears to have been reached after a rather dull period. Envelope manufacturers report a fairly strong market with a demand that is readily absorbing their output, while book and writing mills are busy. The agent handling the output of one of the big Ontario book paper mills states that he has orders well ahead and that he was having more difficulty in filling orders promptly than in booking them. Other book paper mills are equally busy although it must be said that the wholesalers are not stocking heavily in that or in any other line of paper just now.

PULP.—There is no great activity in the pulp market. Groundwood pulp, which has been fairly active of late has fallen off slightly in demand. None of the paper mills are stocking up and are buying just about as they require it. There is sufficient demand, however, to take care of the output at the present time and neither paper nor pulp mills have any stocks of size on hand. While nominal quotations on groundwood range from $35.00 to $38.00 purchases have been made as low as $25.00

This of course is ridiculous in view of wood values and conversion costs. Some bleached sulphite may be had at $90.00 and unbleached at $65.00 for news grade and $70.00 for book grade.

NEW YORK MARKETS

New York, June 9 (Special Correspondence)

Although reports tell of mills curtailing production in some cases while taking inventory or preparing for the inventory period, activity in the paper manufacturing industry as a whole continues on a fairly broad scale. Manufacturers of some kinds of paper continue to drive their plants at a fast pace. Print paper, book and fine paper mills are keeping well occupied and there has been little or no reduction in the output of these papers excepting in cases where it was necessary to shut down machines temporarily for repairs, but on the other hand indications are not wanting that production of coarse papers, of some specialties and of certain descriptions of box boards has been slowed down to some degree as a result of the quieter market obtaining for these commodities.

Jobbers in New York say they are kept comparatively busy filling the orders they are favored with by customers. Demand for most kinds of paper has lost a certain degree of that keenness which existed a short while ago, but there is nevertheless a good and steady call for supplies from printers, publishers, department stores, merchants and other important users of paper, and current demand has every characteristic of being very healthy. There is very little buying for stock. Consumers seem to feel that they can get paper when needed and get it fairly quickly, and they are therefore placing orders chiefly as their requirements develop. Moreover, jobbers and dealers appear to be carrying small stocks, which is an important fact when the statistical position of the industry is considered.

Paper prices exhibit much strength. Prospects are at present that there will be few changes of consequence during the coming summer. It is true that raw materials of some kinds are receding in cost, but this is a situation that invariably arises at just this season and it is more than probable that the trend of raw material prices will turn in an upward direction in the near future, as it usually does. Moreover, it must be remembered that paper which is being made and delivered today is manufactured of material purchased some time ago on a much higher raw stock market. Furthermore, it cannot be denied that paper prices, in comparison with those of any other manufactured commodity, are low today. Manufacturers have exerted every possible effort to keep prices stabilized and have not taken advantage of market conditions to raise their quotations as have so many manufacturers of other products. Therefore unless demand for paper drops off to a very great extent, which certainly seems improbable at present, prices seem destined to hold pretty firm over the summer.

Newsprint is firm and in steady demand. Local publishers continue to put out big issues, and it is becoming a regular matter for New York newspapers to print announcements that so and so many columns of advertising have been omitted because of lack of space. Display advertising is setting a new record and publishers are up against a problem trying to run all the advertisements offered them.

Book papers are firmly quoted and are into consuming channels at a consistently good rate. Fine papers also are in relatively active demand. Mills in the Holyoke district are kept busy and are running at close to capacity. Prices are firmly maintained. Wrapping papers are in fair call, with orders of a volume which can be called routine for this season. Tissues are rather slow though mills mostly have some good orders on file which absorb the bulk of their output.

Box boards are just about holding their own in price and demand. Current buying by paper box manufacturers is nothing out of the ordinary, yet it is fully up to normal, and quotations on board show no important change. Plain chip board is quoted at about $60

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Finnish Cellulose Association
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AND

Finnish Wood Pulp Union
Helsingfors, Finland

a ton f. o. b. New York, and news board at $62.50 to $65.

Paper exports from the United States were of fair volume during April though slightly below March, the decline approximating six per cent from the record level for the year thus far reached in March, according to Government figures. The total value of paper exports in April was $2,181,839, compared with exports valued at $2,324,928 in March. Quantity figures were as follows: Newsprint, 2,950,509 pounds in April, against 3,978,361 pounds in March; book paper, 2,119,224 pounds in April, against 2,383,962 pounds in March; wrapping, 2,291,564 pounds in April, against 2,551,732 pounds in March; writing, 611,301, pounds in April against 4,253,288, pounds in March.

GROUND WOOD—There is not much trade activity in mechanical pulp. Consumers are buying only when pressed by necessity for supplies, and current demand is almost entirely against direct requirements. Users seem imbued with the belief that there is plenty of ground wood to go around and that consequently there is no incentive for them to stock up, and grinders and dealers frankly admit present orders are mainly for small tonnage. There is, however, a fairly steady tone to prices since the sagging of quotations a short time ago. Domestic producers are quoting around $35 a ton at grinding plants for prime spruce gound wood for prompt shipment, and it is stated that not much pulp is available at under this figure though now and then a sale is reported at a little less. Moreover, it is pointed out that the fact grinders are accumulating stocks at this time is an unimportant market factor since they invariably pile up pulp at this season to last them over the dry period later in the year.

CHEMICAL PULP—Demand for chemical wood pulp fails to show any expansion of note. Buying is of moderate volume but limited almost entirely to supplies immediately needed by consumers. The technical position of the market is unchanged. Importers view matters with confidence and firmness, and insist they cannot see how prices can go lower for some months to come on account of the strong market conditions in Scandinavia and the general sold up position of manufacturers there. The continued slow demand, however, has not strengthened the price tone. If anything, the tendency is a trifle softer. At least reports from authoritative sources say that buyers are succeeding in getting some lots of pulp at slight concessions, as sellers are finding it necessary to shade asked figures to move pulp in certain directions.

Unbleached sulphite and kraft pulp are probably the firmest items in the market as present. Foreign prime unbleached sulphite is quoted at 3.40 to 3.50 cents a pound ex dock New York, and Scandinavian kraft at around 3.35 cents on the dock. Bleached sulphite shows a little easier tendency. No. 1 foreign bleached is reported held for around 4.75 cents per pound ex dock New York, but half prime is said to have been bought by paper mills down to 4 cents. Prices of domestic pulps rule fairly steady although most of the business transpiring is on contracts.

RAGS—Papermaking rags continue to exhibit a declining price tendency. With the exception of several classes of stock, the movement toward mills is light and dealers are finding it necessary to accept the prices bid by consumers to get orders. In other words, it is mostly a buyer's market, and papermakers consequently are securing the rags desired at very nearly their own figures. Roofing stock has eased off again. Sales of No. 1 packing have been reported at 1.25 cents a pound f. o. b. New York, and No. 2 roofing stock is said to have been bought by felt paper mills down to 1.10 cents New York. In fact, some mills are reported bidding no more than one cent a pound at shipping points for No. 2 packing and the probabilities are they are getting some supply at this price basis.

New cuttings of nearly all kinds are in slow demand. No. 1 white shirt cuttings are offered by dealers at 12.75 cents a pound at shipping points, and few mill orders are in the market. Washables are available at 4.75 cents per pound at dealers' points, fancy shirt cuttings at 6 cents, unbleached muslins at 11.50 cents, blue overall cuttings at 8 cents and light silesias at 8.25 cents. Old whites and thirds and blues display a sagging price tendency after having held firm for a lengthy period.

PAPER STOCK—As one trade authority describes it, "the bottom seems to have dropped out of the waste paper market." There is but slight demand and prices are declining at a rate that makes it difficult to tell from day to day what market levels actually are. Some sharp recessions have occurred this week. Folded newspapers have moved down in price to 85 cents a hundred pounds f. o. b. New York, and No. 1 mixed paper to 75 cents, while city mixed has sold at 55 cente New York. Old magazines have declined to around 1.70 cents a pound New York, and ledger stock to 1.80 cents. Shavings display a steadier tone than other grades though this class of stock is lower also. Hard white shavings of No. 1 grade are quoted by New York dealers at 4 cents a pound or slightly higher, and No. 1 soft white shavings at 3.25 cents. Old kraft paper is holding its own at 2 to 2.10 cents a pound at shipping points.

OLD ROPE AND BAGGING — Prices of old rope are easy and market levels for this papermaking material are lower than they have been in a long time. Domestic manila rope in No. 1 condition is reported bringing only around 5.75 cents a pound at dealers' shipping points, while it is said some purchases have been below this basis. Old bagging is largely neglected by buyers and prices are uncertain. It is known, however, that mills can buy No. 1 scrap bagging freely at 1.25 cents a pound at shipping points, and roofing bagging at 90 cents a hundred pounds.

FIBRE BOARD MANUFACTURE

Wonderful improvements have been made in the methods of manufacturing fibre board containers during the last few years. A new rotary container making and printing machine was recently invented which will handle fibre board from 84 to 120 in. wide and a correspondent of *The Times* (Trade Supplement) gives the following particulars:

This machine will take a sheet of board, trim the ends, slot it, crease both ways, cut out for the staple flap, and then print the board in two colours, all in one operation. This machine can be equipped to produce two complete containers with a single operation, and it will handle the raw material in varying thicknesses. Both kinds of fibre-board packing case, the solid and the corrugated, are produced in different ways to make them suitable for the special goods they are to hold.

In the corrugated series, one of the best types is known as the centre special slotted case. This can be stored in a flat condition when not in use, thus saving warehouse space, and it can be produced in the following five varieties. — it can be made with double faced board having a resistance of 275 lb. to the square inch; it can be made of double wall or double strength corrugated board, glued together so as to make one piece, the case being fastened with a regular taped corner; a third variety is known as the strong box of double faced board, with a resistance of 200 lb. to the square inch, which has an extra double two-inch fold, giving a triple edge to the case, and ensuring that the contents would not touch the crease of the covering flaps; a fourth variety can be made of the double wall pattern, but with a triple taped corner; while a fifth style can be made of corrugated board resisting 200 lb. to the square inch, lined with a thin sheet of board having a resistance of 175 lb. to the square inch.

A significant advantage about all these varieties is that a typical wooden case, when filled with the same contents, weighed 4½ lb. more than the first, third and fifth types described and 4 lb. more than the second and fourth. Fibre board containers are now being used for such heavy goods as machinery parts, electric cable, mattresses, furniture and for many other articles which were formerly packed in wooden boxes. The material used for the construction of fibre board packing cases is so adaptable that almost any thickness and density are procurable, so that a case for heavy goods can be obtained as easily as one for lighter traffic.

WHAT THE BASS VIOL SAID

Try this on your tympanum

Zoom Ah! Boom Ah! Zoom Ah! Boom Ah!
Zur, Zoom Boom! Zur Zoom Boom!
Zur! Zur! Zur! Boom Ah! Boom Ah!
Zum! Zum! Zum!

These are the actual words, hoarse, raucous and resounding, that the big instrument spoke to me as I sat "watching" the orchestra and I said, "What a wholly unnecessary "noise"that is." As compared to the ethereal tones of the violins, the truly melodic notes of the clarinets, the soul-searching strains of the violoncello, even the rattle and clatter and bang of the drums and their tempo-keeping collection of collateral instruments, it seemed that the big bass viol was not even making "music."

So I was thinking when suddenly the taut bow broke, every strand parted at once, and the music went "lamely" on "without" the "help" of the viol, until a new bow could be procured from those mysterious depths under the stage.

Then came the thought that this big, coarse fellow "was" necessary, that he sustained, held up the lighter, finer, more attenuated instruments and that his place was a place of honor on a par with any other.

And again the obvious application comes home (does it not) to the fellows who do the dirty and so-called menial work. If they do this work well with what coarse instruments come to their hands, they should not be without honor in their own and others' estimation, the honor that is due to a "basic" and a "necessary" function, of sustentation in industry and business.—H. E. R. in The Neponset Review.

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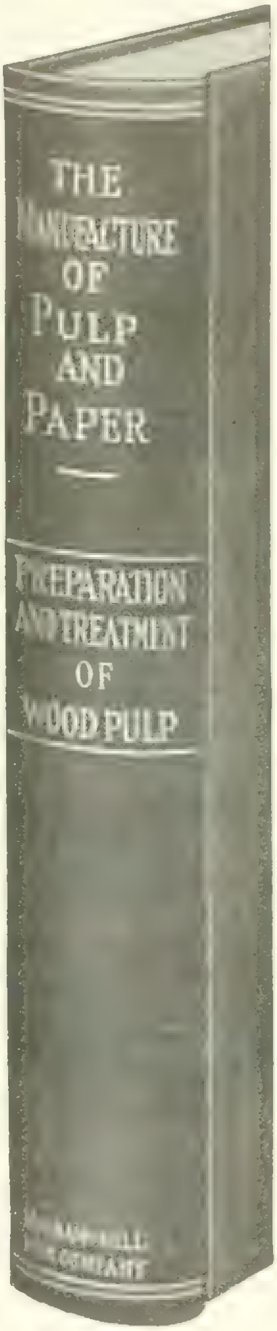

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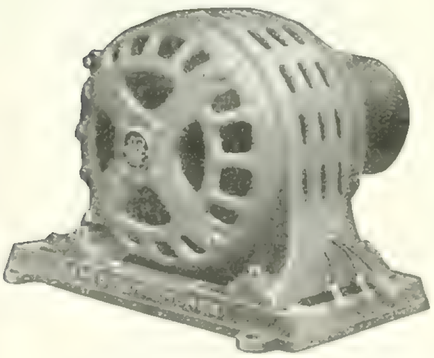

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:-: EDITORIAL :-:

ACTION AT LAST

When the Government announced some time ago that a commission would be appointed to investigate the matter of pulpwood supply for Canadian mills, and the advisability of putting still further restrictions upon the export of wood from Canada to other countries, it appeared that this was but a means of delaying doing anything active in regard to the matter. But with the smoke from fires in the forest surrounding the national capital coming into the very windows of the Parliament Buildings there could be no doubt in the minds of those charged with the conservation of our resources and the protection of our industries that the situation is becoming very serious indeed, and that some steps must be immediately taken for the preservation of such forests as are left for the use of home industries.

A more rapid step in the direction of prompt action for the protection of our wood supply for Canadian mills is seen in a resolution of which notice was given last week by the Hon. W. S. Fielding, Minister of Finance. The resolution declares that the export act shall be amended "by providing that the Governor in Council may by regulation prohibit the export of pulpwood from Canada of the variety, kind, place of origin or having the particular ownership or production prescribed in the regulation."

It is evident from the wording of this resolution and the placing of its application in the hands of the Governor in Council provides a measure which can be applied promptly as the necessity demands and with justice as Canadians will expect. This application will doubtless mean a very considerable decrease in bogus settling for the purpose of skinning off woodland in order to sell the wood as pulpwood, and we trust that it will put practically at an end the placing of settlers who really want to make permanent homes upon wooded areas where they are in constant danger not only of setting forest fires, but of being consumed with their property, as was the case in several towns in Quebec during the past week. There is plenty of cleared land available for settlement, and land too which is much better adapted to agricultural purposes than much of the timbered area which has been alloted to settlers in past years. The use of proper lands for legitimate settlers will not only be a protection to the settlers themselves, but it will be a protection to our pulp and lumber companies by leaving intact their limits which, in most cases, are even now none too large.

The bonus which has been paid in some cases to settlers for taking up land where forests have been in danger and destroyed could better be doubled to give the settler a bit of working capital and in order that the forests might be protected and the settler himself removed from this great danger.

It has been, and doubtless will again be argued that some people will be injured by the application of the clause referred to in the export act. This may be true. It is doubtless too that there are few of our laws that do not, or have not, at some time made it difficult for someone, but there is also in the clause a provision by which the hardships may be minimized, and we trust that our legislators will find it possible to arrange such regulations as will compensate real farmers for any actual hardships. The Government is to be commended for taking action that will lengthen the lives of our mills.

TECHNICAL SECTION SERVICE

The Technical Section of the Canadian Pulp & Paper Association was organized to be of service to the Industry by virtue of the ability of members to tackle problems of a scientific character, and particularly such problems as have a practical application to the conduct of the Industry. There are a good many problems and phases of pulp and paper making which are not thoroughly understood. Some problems occur only once in awhile and their effect on pulp and paper making is more or less indirect. Scientific men are interested in such problems as are of a fundamental nature and their solution eventually finds some reflection in more economic production either from larger yields or smaller cost of operation.

There are, however, many problems of everyday occurrence which sometimes are exceedingly puzzling. Some of these are sufficiently large and widespread to warrant the appointment of a committee of the Technical Section for their investigations and the committee is often at work for a year or more in collecting information and putting it in shape for the use of the membership. On the other hand, there are problems, more numerous perhaps, which do not affect the industry as a whole, or if they do, the effect or contact is not always made throughout the industry at the same time. This is brought out in a letter which was received by the Executive from one of the members who replies in response to a query sent out by the chairman for suggestions as to how the meetings can be made of more value to the members. The suggestion reads as follows:

> "It occurred to me during the last meeting that it might be a good idea to permit members to send in queries about new processes or new machinery in the pulp and paper industry during the year and these could be answered briefly during the meeting. For instance, a member might write to the Secretary asking what experience the mills might have in the use of liquid chlorine for bleaching. The Chairman would probably then appoint somebody to get information on the subject and at the annual meeting he would give a short report which would be followed with an open discussion. The report and discussion need not take more than about 15 or 20 minutes and, if necessary, somebody should follow up the question after the meeting and report to the Section as soon as possible.
>
> "Another suggestion which I had in mind was that it might be advisable to have the various committees report, not only on original work the Committees have been doing during the year, but also to give a review on new developments in connection with their particular line of work so that the Section would always be kept more or less up-to-date."

The first suggestion sent in by this member, who obviously takes great interest in the work of the Section, practically makes the Technical Section a committee of the whole for attending to such work as this. A somewhat similar proposition was made some little time ago for information service to the members but for some reason or other apparently did not get very far in the working out.

This suggestion really brings again to the front another suggestion that was made sometime ago, and namely that the Association engage a technical secretary. Such an officer would have at least a knowledge of what plants were likely to have information of a certain kind or experience with certain types or makes of machines, and could ascertain the conditions under which processes or machines were in operation. Without such a secretary, the only system left is the questionnaire method which, while not entirely satisfactory, does fill the bill and is successful insofar as members will take the trouble to assist fellow members by answering the questions asked. The assembling of the replies to questionnaires could doubtless be accomplished fairly well under the present circumstances by the office staff of the Section, and valuable service could be rendered the Association and the Industry by virtue of the information that would thus be made available. Of course it need not be necessary to hold such information until an annual meeting before sending the results to the firm or member asking for it. It would seem advisable, however, to review the service of the association along this line at the annual meeting so that supplementary information and discussion of problems could be brought up.

Both suggestions made by the member are excellent ones and no doubt the value of the Association to the various members would be considerably increased by putting them into operation. The gradual assembling of such data would make the secretary's office one of the most important repositories for scientific information on paper making that there is. It must not be forgotten, however, that the success of any movement along this line depends on the willingness and completeness with which fellow members respond to requests for information on any problem that comes up, and even the excellent service that is being rendered by committees depends very largely on the willingness of members of the main association to permit or to encourage their technical men to do and contribute work having to do with the aims and purposes of the Technical Section. There must be a generous response, not only among members but among the Executives of the employing mills, if the work of the Technical Section is to have the value that it should have to the Industry. The fact that a company has spent money to get information certainly does not mean that money is going to be lost to the company by letting somebody else have perhaps a part of that information second hand. On the other hand, for the majority of those wanting information to come continually to a few companies provided with research staffs and expect them to come across time after time without reciprocating in the most cordial manner will soon put the quietus on any such movement as is advocated in the letter quoted, or in fact upon the whole aims and ideals of the Technical Section.

PAPER CLUB IN DANGER

Our readers will have gathered from a recent report in our columns that the affairs of the Montreal Paper Club have reached a crisis. The organization, it is complained, has not received the whole-hearted backing of either the principals of the paper companies or of the salesmen and others connected with the companies. The programs have been attractive, but save for rare occasions, the attendance has been meagre. The objects of the Club are commendable, but it is obvious that if those who are supposed to be interested and to be benefited are apathetic, then the objects of the Club will fail to be attained. An organization that is half dead is worse than no organization at all. Those who bear the burden of the work are discouraged by this want of co-operation and interest.

The executive have therefore taken the only possible step. They have convened a meeting at the Queen's Hotel Tuesday next, June 26, at 12.30, at which the condition of affairs will be put squarely up to the members. Do or do they not wish the Club to continue? They must decide. If it is to continue, then more enthusiasm will have to be shown.

Will the paper trade allow a Club of this character to die because of the lack of a little initiative and pep?

Problems of Sulphite Pulp Manufacture

BY ARTHUR S. M. KLEIN, Dr. Ing.

Of the chemical pulps in use four fifths is produced by the sulphite process of manufacture.

As to the chemical constitution of cellulose or of wood itself we are without exact knowledge. As Willstaedter put it, we know that the cellulose molecule is composed of glucose molecules, but how these glucose molecules are combined is as yet unknown.

The trouble with all chemists who have done research work on cellulose and lignin as well as on the chemical constitution of wood is that they have approached the problems as chemists only. Now if the chemist is not at the same time a physicist he will be unable to grasp the subject in its entirety. M. W. Bray and T. M. Andrews of the Forest Products Laboratory of the U. S. Forest Service have demonstrated recently what was known empirically that pulps of the same chemical composition are not identical in their papermaking qualities. The excellent work pursued at the Madison, Wis., laboratory, has done much to clarify our views of what must be done to effect the production of a good sulphite pulp, how to obtain it of uniform quality and the means necessary to modify such a product in order to meet the demands of papermakers.

It is a remarkable fact and quite true that although we have been making soda pulp for upwards of seventy years and sulphite pulp for nearly fifty years, we know little more about the chemistry of the pulp making processes than we did in the days when these processes were worked in small mills making something like one or two tons a day.

It is to be hoped that Mr. John D. Rue who is now in charge of the pulp and paper section of the U. S. Forest Products Laboratory at Madison, Wis., will carry forward the work of the laboratory and produce new and more interesting facts. In 1905 when I organized the Cellulose and Paper Chemists' Association, I advocated the erection of a special laboratory for research work in pulp and paper. It does not seem likely that European laboratories will be in a position for some time yet to carry on such researches. In the case of British papermakers interest is lacking in pulp making processes, and financial considerations now hinder research in Germany. The Swedes have closed their "Pappersmassekontoret" and the Norwegians have no special laboratory. Finland has a central laboratory, but the work done there is confined to every-day problems. There is not much interest taken in wood and cellulose chemistry in France and Italy as big forests do not exist in these countries and they lack special laboratories. I understand that laboratory work has been suspended in Canada, so that the United States may take pride in possessing the best laboratory for pulp and paper research that exists anywhere in the world.

It is manifestly up to Americans to grasp their opportunity. I may here remind the staff of the pulp and paper laboratory at Madison of Herzog's method of using Roentgen rays for determining the molecular constitution of cellulose. If they decide to combine chemical and physical methods in their research work they will achieve fame and accomplish results that will benefit the whole pulp industry.

Of the problems of practical interest to manufacturers of sulphite pulp, many are quite old. Take the question of preliminary steaming of the wood before digestion with the sulphite liquor. This method was invented before the sulphite process came into use, an American patent (No. 63044) having been issued to J. R. Haskell on March 19, 1867. The influence of the composition of cooking liquor on the time needed for impregnating the chips has been shown by Dr. B. Johnsen. In this connection there is an old patent mentioned by Schubert and also in the later edition of his book by Knosel, according to which Archbold, of Oswego, N. Y., filled the digester with chips and milk of lime and then introduced SO_2 gas, the idea being to produce in this way calcium bisulphite in the nascent state. This should make for universal efficiency and might spare us all the expense of a separate acid making plant, provided it would work well in practice. I wonder if there is somewhere among us a genius capable of putting the idea into practical operation.

Another question of no mean age or importance has to do with the use of regenerated acids. None of the chemists who have worked on the theory of the pulp cooking process has yet succeeded in giving a satisfactory explanation of the fact that we are able to cook faster and to get a more uniform pulp with the use of cooking lyes containing some regenerated acids than when using only fresh acid liquor.

If we compare the action of two cooking acids on the same quality of wood, both lyes containing the same percentage of total, combined and free SO_2, but on coming directly from the acid making tower and the other containing a proportion of regenerated acid, it is noticeable that in the digester containing regenerated acid, the cooking time is shortened and the quality of pulp is not adversely affected by the quickened cooking. The origin of the acids can be distinguished by smell and color. The odor of regenerated acid is sharper, it stings more, and it has a greenish color, whereas the acid coming directly from the tower is a colorless, transparent fluid. Regenerated acids all contain organic matter, formic acid, etc., but we do not know what part these organic compounds play in the cooking process. We can guess at their influence, the result is plain to be seen, but the reactions can not be stated with scientific accuracy.

It is the dream of all sulphite pulp manufacturers having trouble with the linings of digesters, such as was common twenty years ago, to evolve a process in which cheap chemicals could be used as in the sulphite process, but with neutral or alkaline solutions. I know of no process which fulfills this ideal. In like manner, I know of no process capable of producing stuff similar to the mixture of chemical and mechanical pulps used in newsprint manufacture. The desideratum is an economical process for the manufacture of a sort of half-cellulose, so as not to disintegrate the wood quite so completely as is effected by either the sulphite, soda or the sulphate process. The production of kraft by the sulphate or soda process approaches the desired end, but what is actually needed is a white pulp that can be made directly into newsprint.

Think what it would mean if all the big newsprint mills could be spared the grinding and cooking of pulpwood, with all the necessary equipment, and be enabled to produce a satisfactory pulp by a single process, instead of grinding and cooking separately. A move in this direction was effected with the introduction of the high pressure grinding process in which less water is used and a higher temperature is maintained as a consequence. In this process probably by a hydrolytic action, the fiber obtained is longer and more elastic than that produced by the ordinary grinding process, it more nearly approaches the type of fiber denied, but it is still necessary to incorporate a certain proportion of sulphite pulp with it on the manufacture of newsprint paper, and thus it does not meet our requirements.

In regard to the utilization of spent sulphite liquors little progress has been made. The recovery of alcohol by fermentation and distillation is not profitable under normal conditions, though two mills in Germany are engaged in it because they have access to cheap coal. Alcohol plants in Sweden and the other Scandinavian countries have been closed down, because the alcohol produced could not be sold at a profit.

Other processes for the production of glue, papermakers' size, organic compounds, and many other materials, out of waste sulphite liquors, have failed to give profitable results on a commercial scale. As a rule it is more economical to get rid of the spent liquor by discharging them well diluted into watercourses.

It must be confessed that in regard to the utilization of waste sulphite liquor we are not much ahead of the situation that existed when the first big sulphite pulp mill was started. In a chemical sense we have made little progress to a better understanding of the process of pulp manufacture or to increased knowledge of recovery processes. Our development has been more marked along the line of acid manufacture, where we have an absolute control, and in the saving of labor and fuel. It is true that great progress has been made in bleaching methods, but a discussion of this subject will be reserved for another paper.

POSITIVE FILLING

If our teeth could be filled when necessary as simply, quickly and satisfactorily as a Jordan engine can be equipped with a new filling of the type introduced by Bahr Brothers Manufacturing Company, most of us would be saved a lot of time in the dentist's chair and a good deal of discomfort and inconvenience. The success of the positive type of filling for Jordan engines which, we believe, was first introduced by this concern, is shown by the recent application of the same principle to the manufacture of a new type of beater bar equipment which is cast in one cylinder. This, of course, does not detract from the value of the Jordan filling, but is a compliment to the inventors and development of that important innovation in paper making machinery.

The Canadian trade for these fillings has been growing steadily so that it became advisable to have a Canadian house representing this concern, and the William Hamilton Company of Peterboro, Ontario have been appointed as the agents of Bahr Brothers for the manufacturing and distribution of this type of filling. A very interesting set of photographs is in the possession of the Pulp and Paper Magazine which shows a Jordan completely relined in just six minutes, as indicated by a clock whose face is photographed along with the successive steps in the replacement of the filling.

Those who prefer the service of sin must be satisfied with the wages of sin.

OPERATING A PAPER MACHINE

The following is a list of points which should be carefully remembered and applied in order to secure the proper operation of the papermaking machine:—

1. The paper stuff should be well mixed in the stuff boxes and vats.
2. The pulp should travel downward in the paper beaters mixed with a regularly calibrated amount of water.
3. There should be proper facilities for the rapid emptying of the paper stuff from one chest to the other.
4. The waste liquors, that are added, should be controlled so that a constant regular flow of the same is secured by means of constant level feed tanks.
5. The beating in the refining engines should be at a minimum.
6. Proper control should be exerted on the method of allowing the paper stuff to enter the head end of the papermaking machine and to distribute itself in the feed box.
7. The devices, which control the agitation of the screen, should admit of easy manipulation.
8. The proper regulation of the different parts of the Fourdrinier portion of the machine so that a sufficient accumulation of paper stuff is found on the screen.
9. The proper location of the one more drain rolls.
10. Thorough washing of the woolen blanket.
11. The little known practice of flooding the paper web as it enters between the cloth press rolls, which often avoids the woolen blanket crushing the paper web.
12. The use of fulled woolen blankets in the place of woven woolen blankets on the secondary moist presses.

The condition of the couch rolls is of great importance not only with respect to the travel of the felts, the drying of the paper, but also in the avoidance of breaks in the paper during the drying process. It has been stated that the percentage of breaks in the dry paper during the process of drying, as it passes between the surfacing and calendering rolls and finally as it is being rolled up, amounts to 2 to 3 per cent. of the total production of finished or semi-finished paper. In order to reduce these losses and at the same time lessen the work of the operators, who have to watch this part of the papermaking process, the author has invented and installed on a new machine a paper web carrier, which has been successful in diminishing these losses to the extent of 20 to 30 per cent.

The average percentage of breaks in the manufacture of thin papers is 8 to 10 per cent. of the weight of finished saleable product.—M. Arnould in *Le Papier*.

ADDITION TO CORNWALL PLANT

At the annual banquet of the Cornwall board of Trade Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, made an announcement that he had just asked for tenders for a big addition to the already large plant of the Howard Smith Paper Mills plant at Cornwall and that tenders for other work here would be called for shortly, the whole to involve the expenditure of hundreds of thousands of dollars. Details will be given in next issue.

Flow Meters As Applied To The Paper Industry

BY JAMES MESS

One often hears the expression, "Ton of coal per ton of paper," or "How much coal do you use per ton of paper?" We are all striving for the reduction of the former and the increased production of the latter. How can the reduction of the former be best attained?

The boiler plant is most assuredly a "Steam Factory," and the final cost of producing steam is just as important as the cost of paper production itself. Instead of the comparison, "Fuel per ton of paper," should it not be split in parts, "Cost per thousand pounds of steam—Thousand pounds of steam per ton of paper"?

There is only one practical way, to date, of obtaining these relations, namely *Flow Metering*.

The flow metering principle is applied to the measurement of steam, water, or other fluids in large quantities, and consists of producing a differential pressure which varies in a definite and known relation to the rate of flow, then translating this pressure difference into terms of volume or weight, according to requirements. As steam is the largest "fluid cost" in the paper industry, our remarks will perforce deal with it most completely.

A Flow Meter, as we know it, can be divided into two parts. First: the Differential Medium which creates this differential pressure; Second: the Meter proper which measures this pressure difference. A concrete example might be taken of a main steam line supplying steam to the mill. A suitable location is chosen for the differential medium which may be an orifice plate, a Pitot tube, or a Venturi section, as conditions require. If an orifice plate is used, suitable flanges have to be provided. With a Pitot tube, it is necessary to tap the pipe only for its housing. With a Venturi section, the installation is somewhat more complicated and expensive, in that a length of pipe, equal to the specially designed Venturi section has to be removed and replaced by the section proper. The orifice plate is perhaps more commonly used, as it has greater capacity for minimum and maximum flows and differs from the Venturi section in that the approach of the flow is fully contracted by the sharp edges of the plate. This results in an even amount of friction loss, and therefore the effect of the orifice as a means of obtaining the differential pressure is the same for all orifices of its kind.

The Orifice Plate consists of a monel metal disc, varying in thickness according to its size, but of an average of 1-16 inch with a circular opening. This disc is inserted between two flanges in the line forming a contracted area in the stream of flow. On each side of the orifice plate, at specified distances, reservoir or condenser fittings are installed, from which short lengths of small diameter piping lead to the meter proper. These reservoirs consist of cylindrical containers placed in horizontal position with reference to the center of the pipe, and ensure an equal head on the connections of the meter in the case of condensible fluids.

The meters themselves are of many types and designs, and cannot be dealt with in specific detail in this article. The following points however, might be considered when the purchase of flow meters is contemplated.

Accuracy. If a flow meter reads within two percent high or low, through a reasonable range, it should be considered accurate. Continued accuracy is best obtained from equipment of simple design,—as few moving parts as possible,—where adjustment is obtained in a simple manner,—where the totalizing instruments operate independently of the indicating and recording features. All flow meters measure units only, and care has to be taken that the correct factors are used for transcribing these units into pounds, cubic feet, gallons, etc.

Durability. A meter should be of rugged construction, the operating parts completely enclosed and should after adjustment, remain in adjustment, for an almost indefinite period.

Versatility. Each instrument has, to all intents and purposes, to be specially calibrated for the conditions for which it is required. As time goes on, these original conditions may vary. A meter should be so adapted that recalibration can be made and the instrument adapted to new conditions with minimum cost and trouble.

Visibility. Indicating features of the meter should be very easily seen at considerable distance, so that where improved operation is necessary, the operator has everything to advantage in a perfect instantaneous indication of the flow through the line in which he is interested. It is often of extreme advantage to install on a line, for example, steam line to digester, extra indicating instruments, one in the boiler house for the assistance of the firemen, and the other in the digester room for the benefit of the cook and his helpers.

Maintenance. Modern design has brought the maintenance cost of the average flow metering equipment to a minimum. It must be understood, however, that as even an ordinary clock requires winding, a flow meter installation must receive some attention and consideration, such as avoiding leaks in the system, etc., and regular inspection of equipment.

Centralized Control. In modern power plant practice where centralized control is daily becoming more important, factory instruments which operate accurately at any desired distance from the metered line, are of decisive value.

Flow metering in the paper mill business as well as in many other industries, is synonymous with power plant cost accounting.

Power Plant Cost Accounting is of vital interest to two distinct branches. One branch comprises executives and accountants who have extensive training in general methods of cost accounting, but who are interested in power plant practice only indirectly and purely from a profit and loss point of view. The other branch embraces engineers and operating men who are familiar with power plant operation but who have not always given attention to the systematic recording of factory costs.

Steam Generation. The first step is to determine the cost per thousand pounds of steam generated. To accomplish this, certain quantities must be definitely obtained, that is, the amount of coal burned, water used, total amount of steam generated, etc. The cost schedule below might serve as a guide for co-relating these items and is divided into two classifications, "Operating Expense," and "Maintenance and Depreciation."

COST OF GENERATING STEAM

Operating Expenses—Generation:

1. Fuel used by steam plant (Coal, oil refuse) . . M lbs
2. Water used by steam plant. . . . . cu. ft.
3. Cost of superintendence . . . .
4. Miscellaneous labor . . . .
5. Oil, grease and waste . . . .
6. Supplies . . . .
7. Electricity used by steam plant . . . . K. W. H.
8. Steam used by steam plant (auxiliaries) . . . . Lbs

Total operating expenses . . . . (a) . .

Maintenance and Depreciation—Generation:

9. Depreciation on power plant building and equipment used in producing steam . . . .
10. Repairs to power plant buildings . . . .
11. Miscellaneous equipment . . . .
12. Repairs to boilers and fittings . . . .
13. Repairs to power plant piping . . . .
14. Repairs to coal and ash handling apparatus . . . .
15. Repairs to miscellaneous equipment . . . .
16. Loose and hand tools . . . .

Total maintenance and depreciation . . . .(b) . .

17. Total cost of generating steam (a and b) . . . . . .
18. Pounds of steam generated (total of Flow Meters). . . . . .
19. Steam cost per thousand pounds . . . .
20. Pounds of water evaporated per pound of coal (18 ÷ 1).

Very often the total steam generated can be metered on the main steam header. A suitable location for the differential medium is not always available in this line, however, in which case each individual boiler has to be metered, and these readings added together as a total. The duties of metering equipment, as far as steam generation is concerned, might be split in two parts, first, Operation, second, Cost Accounting. The successful operation being dependent on the correct interpretation of the readings from the indicating instruments principally; the cost accounting being dependent on the compilation of records for analysis for improved operation. Even should a suitable location in the main steam line be available, and the total steam generated measured in this manner, it is of the utmost importance that where the consumption of coal merits the initial expenditure, that a meter should be installed on each boiler, so that the engineer can synchronize each boiler and divide the load intelligently, tell when each boiler is operating at the best efficiency, etc, etc.

Most engineers today keep carefully the log sheet of their operations, but owing to inadequate steam measuring apparatus, are unable to give guaranteed improvements and results and place with the management definite cost figures. Many executives today regard the boiler plant as a "necessary evil." When questioned they admit their opinion is based on the fact that they are not in a position to criticize the operation of their boiler plant, and therefore depend on the engineer for its operation and do not feel inclined to spend any more money than is absolutely necessary to keep the wheels going round. Cannot complete supervision of this Department be controlled by installing measuring apparatus and getting a final cost per thousand pounds of steam? It will not be a question of why you burn so much coal, but why does it cost you twenty five cents more per thousand pounds of steam, than it costs the engineer at another plant.

Steam Distribution

The careful and economical distribution and use of steam is just as important as the generation of steam itself. In fact many companies that have cut their cost of producing steam to a minimum are, by wasteful distribution, losing a large part of the savings thus effected. Another equally important reason for keeping a record of steam distribution is found in the mechanical necessity for accurately apportioning the steam charges to the various departments. Unless this is done, it is obviously necessary to guess at the amount of steam used, which naturally results in one Department being unjustly penalized, while another derives an unfair benefit. Metering of steam and co-relating the results is the solution to this problem.

It is perhaps unwise to attempt to treat such a comprehensive subject as Flow meters as applied to the Paper Industry in such a short article, so the writer has been constrained to limit himself to merely touching the high spots, with the object in view of causing the users of such equipment "furiously to think."

PULPWOOD EXPORT INCREASE

Every month of the current year, for which returns are available, shows an increase over the corresponding month of last year in volume of unmanufactured pulpwood shipped from Canada to the United States. Figures for the first four months of the year disclose an increase of approximately 30 per cent. over last year, as follows: -

	1922 Cords	1923 Cords
January..	66,094	133,328
February..	98,429	99,830
March..	96,998	113,493
April..	49,076	74,438
Total	310,597	421,089

The increase for May will be greater, according to indications.

The value of the four months' exports was $3,695,626 this year, against $3,125,901 in 1922.

The forests which have sustained enormous losses from fires during the early part of the summer are, therefore, being still further depleted by the increased activities of the wood exporters.

An investigation would reveal that only a fraction of the exported pulpwood is taken from lands in the process of clearing them for settlement by bona fide farmers. The bulk of it is from lands owned or controlled solely on account of their pulpwood yielding value and which, when once denuded of trees, are abandoned.

DO'S FOR PEDESTRIANS

Act normally when a vehicle approaches you.

Trying to dodge confuses the driver, and makes him more liable to hit you.

Cross the street at the cross walk.

If inclined to be absent minded wake up when crossing a street, and keep out of the hospital.

Wait until a car stops before getting on or off.

Give a driver sufficient space in which to pass you, remember you cannot tell what he is going to do.

Be aware of traffic dangers, familiarity and contempt of them invites accidents.

Remember Haste, Recklessness, Thoughtlessness and Carelessness, cause most accidents.

Do as you would be done by.

The Influence of Sulphur in the Cooking of Jack Pine by the Sulphate Process

By SIDNEY D. WELLS

Introduction

In the first[2] of a series of papers on the chemistry of the alkaline processes for pulping wood it was shown in what way the chemical composition of the pulps and of the cooking liquors and the bleaching qualities and paper making qualities of the pulps were affected by the length of the cooking operation. The work has been extended to the consideration of sulphate cooking and the investigation of the first series of cooks recently completed.

Experimental Procedure

In the series under consideration the cooking conditions were as near as possible the same as those in the soda series referred to except for the addition of sulphur. These conditions were as follows:

1.—Charge of chips 100 lbs. bone dry weight.
2.—Caustic soda 20 lbs.
3.—Volume of cooking liquor at beginning of cook—20 gallons.
4.—Time in reaching maximum temperature — 1 hour.
5.—Maximum temperature 170 deg. C. corresponding to a steam pressure of 100 lbs. per sq. in. above atmospheric pressure.
6.—The chips were all thoroughly impregnated with caustic soda solution using the same methods outlined in the soda series.
7.—In order to obtain the effect of sulphate cooking and at the same time avoid the difficulties in controlling the chemical composition of liquors containing sulphur compounds two pounds of ground sulphur were added to the digester immediately after the impregnation period and before cooking was commenced. Assurance was thus gained that each cook would contain 20 pounds of caustic soda and two pounds of sulphur and under similar conditions the resulting sulphides and thiosulphates would be the same in proportion to the caustic soda.
8.—The cooks were blown after periods of 40, 70, 105, 150, 173, 246 minutes, respectively, and by completely analyzing the black liquors and pulps so obtained the same results were secured as if accurate samples had been taken from one cook at the intervals mentioned.

The analytical methods used and the paper making and testing procedure are given in the paper referred to in the first paragraph.

Table 1 contains the complete cooking data of the sulphur soda cooks. The results of the beating tests obtained, using the ball mill method, are given in table 2. The results of the black liquor analyses are given in table 3, and table 4 gives the results of the chemical studies on the pulps. In figure 1 are plotted the results of the chemical studies of the black liquors from the paper referred to and figure 2 the results of the chemical studies on the pulps. Only the curves showing the results obtained with old liquors should be considered in this paper since the others were obtained under conditions not comparable. In figure 4 the results of the chemical studies on the black liquors of the sulphur-soda series are given and in figure 3 the studies of the pulps.

Physical Properties of the Pulps

In comparing the ball mill tests of the soda pulps from jack pine with the sulphur-soda pulps the action of the sulphur is very striking. This is particularly true in studying the folding tests. The maximum folding value for cook 846 of the soda series, the cook giving the highest value, was 530 double folds while cook 869, the best of the sulphur-soda series, gave a folding value of 2373. In the latter case the pulp took 100 minutes to bring out the folding characteristics against 80 minutes for the best soda pulp indicating the greater durability and toughness of the sulphur-soda pulp. The difference in tensile strength was not so marked, the maximum for the sulphur-soda series being 5170 meters breaking length, against 4100 meters for the soda series. Both required 80 minutes to bring up the maximum tensile test. The sulphur-soda series show an improvement in tearing qualities, the maximum tearing at 217 grams against 185 grams as the best for the other series. In the case of the Ashcroft test the highest value for the sulphur-soda series was 1.11 points per pound against .91 for the soda series. We can hereby see that in every test the presence of sulphur has brought about increased value and it is especially true of the tests which indicate toughness in paper, such as the folding and tearing. By cooking up to the maximum time employed in the series with but small excess of alkali the physical condition of the pulps of both the soda and sulphur-soda cooks are improved.

Bleachability of the Pulps

The influence of sulphur on the bleachability of the pulps obtained is also very marked. In the case of the soda series cook 846 was the easiest bleaching requiring 80 per cent bleaching powder while 869 of the sulphur-soda series only required 40 per cent. In each series the bleach consumption decreased with increased thoroughness of cooking but the sulphur-soda series cooks required half or less than half the bleach required by the soda series giving the same yields. Results obtained with aspen indicate that had the cooking been continued for longer periods coloring matter

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[1] Engineer in Forest Products, Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wisconsin.

[2] "The Chemistry of the Alkaline Wood Pulp Process. I. Aspen, Loblolly Pine, and Jack Pine by the Soda Process," by S. D. Wells, R. H. Grabow, J. A. Staidl and M. W. Bray, read at the Annual Meeting of the T. A. P. P. I., New York, April 12, 1923.

would probably have been reabsorbed from the liquor and the bleach requirements increased.

Chemical Properties of the Pulps and Liquor

The chemical tests on both the black liquors and the pulps do not show as marked differences as are exhibited in the beating and bleaching tests. In the case of the black liquors the amounts of volatile acids, such as acetic and formic acids, contained in the black liquor are about the same. In the case of the sulphur-soda series, however, the formation of these acids seems to be quicker and a maximum content of 4.5 per cent is reached at the end of the first half hour, while in the soda series one hour was required to reach approximately the same point. The rate of increase in the solution of lignin is slower in the sulphur-soda series, one hour and a half is taken to reach the point where the rate slacks off instead of one hour as is the case in the soda series. The maximum lignin at the end of the curve in the case of the sulphur-soda series, however, was 2.2 per cent. instead of 1.9 per cent at the end of an equal duration of time in the soda series. With prolonged cooking, however, the lignin content in the soda series increased further. The increase in total solids is typical of any of the alkaline cooks and there is nothing particularly unique in the curve.

The rate of reduction in lignin content of the pulps is slightly slower at first in the sulphur-soda series although at the end of one-half hour the rate of removal is much faster and at 2½ hours practically completed. At the end of 4 hours the lignin content of the pulp was only 2 per cent against 3.2 for soda pulp cooked 7 hours. This clearly brings out the greater effectiveness of the sulphate process for removing lignin. The most striking difference between the two processes is in the rate of removal of cellulose during the first half hour of the cook. In the soda series the cellulose content of the wood was reduced from 60 to 50 per cent during this period while in the sulphur-soda series the reduction was only one-half or from 60 to 55 per cent. This fact is of utmost importance in connection with the use of alkaline liquors in softening chips and later disintegrating them by mechanical means in the production of a high yield of medium grade pulp suitable for box board manufacture. This is especially significant since the partially cooked chips in the sulphur-soda series were much softer and easier to disintegrate than in the corresponding cook of the soda series. The amounts of alpha — or resistant cellulose in the pulps obtained from corresponding cooks of each series are about the same. As the cooks proceeded in each series the differences are not so marked although the reaction in the sulphur-soda series is more definite in nature and reaches completion much more quickly. The pulping action insofar as the chemical tests would indicate was practically finished at the end of 2½ hours in the sulphur-soda series, while in the soda series at least 3½ hours was required using similar cooking conditions.

General Conclusions

The general effect of sulphur in the cooking of sulphate pulps is to speed up the cooking reaction so that under similar cooking conditions the same degree of digestion is obtained at least one hour earlier in the

TABLE No. II

BEATING DATA ON JACK PINE PULPS

Pop test expressed in points, per pound, tearing test in grams, tensile test in meters (breaking length) and folding test in double folds.

Test	Pop test		Tearing		Tensile		Folding	
Process	Soda	Sulphur Soda	Soda	Sulphur Soda	Soda	Sulphur Soda	Soda	Sulphur Soda
Cook No	848	870	848	870	848	870	848	870
Duration of cook (hours)	3	2½	3	2½	3	2½	3	2½
Beating time to maximum test (minutes)	80	100	100	100	120	80	100	100
Maximum test	81	1.11	174	214	3500	3600	220	1776
Cook No	850	868	850	868	850	868	850	868
Duration of cook (hours)	4	3	4	3	4	3	4	3
Beating time to maximum test (minutes)	140	80	140	40	140	60	120	80
Maximum test	87	.90	177	217	3700	3900	390	1953
Cook No.	846	869	846	869	846	869	846	869
Duration of cook (hours)	7	4	7	4	7	4	7	4
Beating time to maximum test (minutes)	100	100	100	60	80	80	80	100
Maximum test	91	1.05	185	211	4100	5170	530	2373

TABLE NO. IV

JACK PINE SULPHATE SERIES

Cook No	Time of Cook	Results calculated on basis of oven-dry wood								Results calculated on basis of oven-dy pulp
		Yield O.D. wt.	Hot H_2O Sol.	Alk. sol. (Corr.)	Lignin	Cellulose	α — cell	β — cell	γ — cell	Cellulose
No	Hrs. or mins	%	%	%	%	%	%	%	%	%
Wood	0	100	3.1	9.9	32.65	58.9	42.2	0.0	15.5	58.9
865 A	40	82.75	3.5	2.5	24.8	54.6	36.3	0.0	15.7	65.9
866	70	63.0	1.3	2.5	13.5	47.4	35.7	0.0	12.2	75.2
867	105	48.6	0.4	1.1	4.0	45.8	37.8	0.0	7.3	94.1
870	150	40.55	0.2	1.0	2.1	38.6	30.0	0.0	6.7	95.1
870	150	40.55	0.2	1.0	2.1	38.6	30.0	0.0	6.7	95.1
868	173	43.2	0.2	1.2	2.5	41.0	32.0	0.0	7.0	94.9
869	246	43.03	0.0	1.0	2.0	41.6	34.4	0.0	7.0	96.8

TABLE I

COOKING DATA OF SULPHUR SODA COOK ON JACK PINE WOOD

Impregnation, 30 minutes - 110 lbs pressure—cooking temperature, 170°C

Project 1168-2

Cook No	Time to Maximum temperature	Time at maximum temperature	Chips			Impregrating liquor									Cooking liquor			Volume of black liquor at end of cook	Yield of pulp	Ratio of free to total alkalie at end of cook	Bleach required 30% available chlorine per 100 lbs. oven dry pulp
			Weight of wet chips	Moisture	Oven dry weight	Volume of impregnating liquor	Volume of return liquor	Difference	NaOH in impregnating liquor	NaOH in return liquor	Difference	NaOH in impregnating liquor	NaOH in return liquor	Diff or NaOH used in cook	Gallons of liquor	Concentrations of NaOH	Sulphur added				
	Minutes	Minutes	Lbs	%	Lbs	Gals	Gals	Gals	GPL	GPL	GPL	Lbs	Lbs	Lbs	Gals	GPL	Lbs.	Gals	Lbs	%	Per cent
865 A	(to 120°C) 40		120.2	11.60	106.2	60.9	40.6	20.3	92.1	76.2	15.9	46.80	25.50	21.3	21.98	125.7	2.0	35.2	82.75	35.1	
866 A	70	0	112.8	11.49	100.0	65.1	50.1	15.0	98.6	80.2	18.4	53.50	33.50	20.0	20.00	120.0	2.0	28.0	63.00	65.3	0.486 lbs. sulphur unconsumed
867 A	60	45	112.1	10.93	100.0	66.8	48.4	18.4	95.6	82.4	13.2	53.25	33.25	20.0	20.00	120.0	2.0	38.0	48.6	70.45	Bleached more than 80%
870 A	60	90	113.2	11.64	100.0	67.45	50.1	17.35	102.6	90.4	12.4	57.65	37.65	20.0	20.00	120.0	2.0	37.0	40.55	73.4	Bleached at 45%
868 A	85	88	113.7	12.12	100.0	65.40	46.35	19.05	98.4	87.0	11.4	53.60	33.60	20.0	30.00	80.0	2.0	49.0	43.20	75.67	Bleached more than 50
869 A	70	176	112.8	11.42	100.0	65.8	48.0	17.8	98.6	85.0	13.6	54.00	34.00	20.0	20.00	120.0	2.0	42.5	43.03	85.43	Bleached at 40%
862 A	60	180	115.3	13.4	100.0	68.3	54.5	13.8	104.0	86.5	17.5	59.3	39.3	20.0	25.00	96.0	2.0		46.80	87.0	

TABLE No. III

RESULTS OF ANALYSIS OF SULPHATE BLACK LIQUORS—JACK PINE

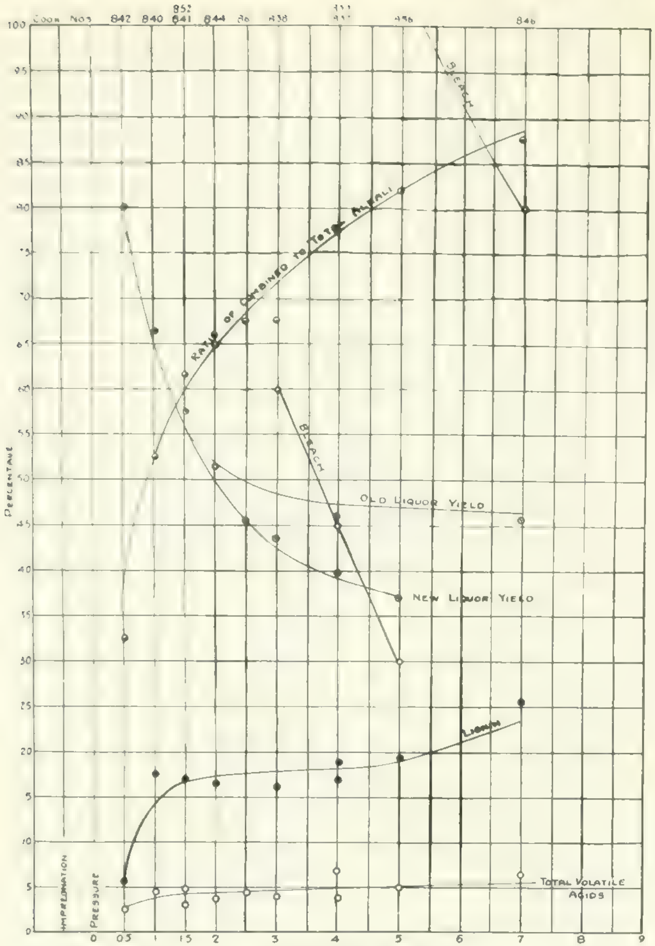
Cook Number	Total time of cook	Volume of impregnation liquor	Volume of impreg. liquor returned	Volume of bl. liquor at end of cook	Lignin in impregnation liquor	Lignin in return liquor	Lignin in impreg. nation liquor	Lignin in return liquor	Lignin added to cook	Lignin in bl. liquor of cook	Lignin in bl. liquor of cook	Lignin obtained corrected	Total solids in bl. liquor	Total solids in bl. liquor	Organic acids in black liquor	Organic acids in black liquor	Ratio of combined to total alkali	Pulp yield
	Min	Liters	Liters	Liters	g.p.l.	g.p.l.	Pounds	Pounds	Pounds	g.p.l.	Pounds	Pounds	g.p.l.	Pounds	g.p.l.	Pounds	Per cent	Per cent
865—A	40	230.0	153.4	133.0	3.0	4.1	1.5	1.3	0.2	12.4	3.6	3.4	58.1	17.1	14.48	4.2	35.1	82.7
866—A	70	246.0	189.2	105.8	3.1	3.6	1.6	1.5	0.1	39.0	9.1	9.0	96.7	22.5	12.90	3.0	65.3	63.0
867—A	105	252.8	186.8	143.5	4.3	2.7	2.4	1.1	1.3	66.9	21.2	19.9	128.1	40.6	12.55	3.9	70.4	48.6
870—A	150	255.0	189.4	140.0	1.7	1.9	1.0	0.8	0.2	64.9	20.0	19.8	120.9	37.3	11.70	3.6	73.4	40.5
868—A	173	247.2	175.0	185.2	2.4	3.6	1.3	1.4	0.1	51.2	20.9	21.0	91.3	37.3	9.07	3.7	75.6	43.2
869—A	246	248.8	181.4	160.6	2.8	3.3	1.5	1.3	0.2	62.0	21.9	21.7	122.0	43.2	12.62	4.5	85.4	43.0

case of somewhat under cooked pulps and in the case of well-cooked pulps the difference is more marked.

The physical tests, however, indicate a marked difference especially in tearing and folding characteristics, the former being increased almost 20 per cent and the latter almost 500 per cent. Marked increase in bursting strength and tensile strength is also apparent.

Where equal yields of pulp are obtained the cooks using sulphur produced pulps bleaching with half the bleach consumption of those made without sulphur.

The slowing up of the removal of cellulose during the first half hour of the cook was also a distinctive characteristic obtained with the use of sulphur, the loss of cellulose being reduced 50 per cent thereby. Otherwise there is little difference in the chemical composition of the pulps.



18804M

Fig. I JACK PINE SODA PULP

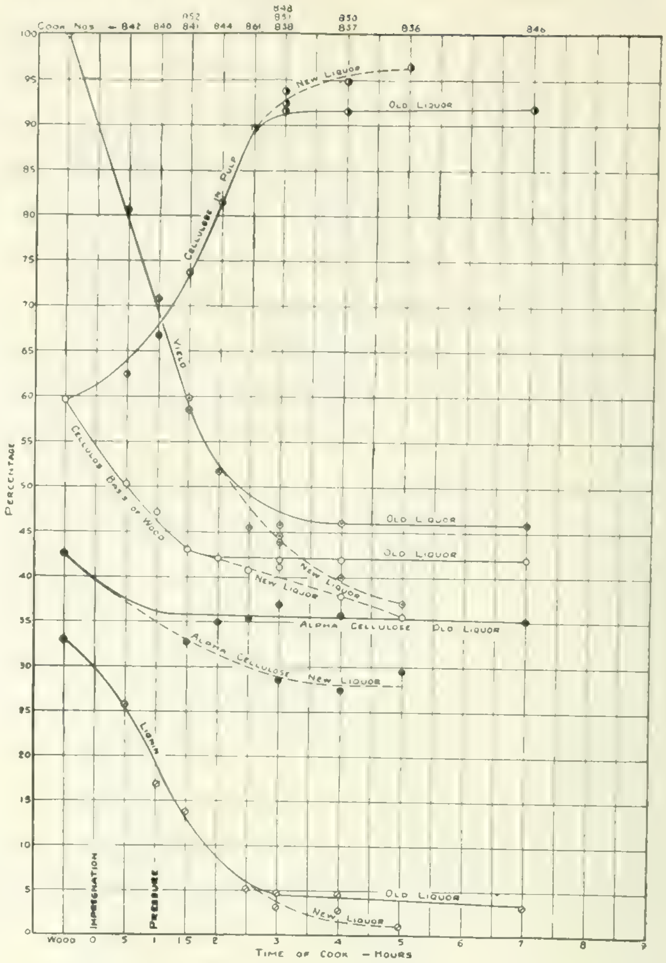


Fig II JACK PINE SODA PULP

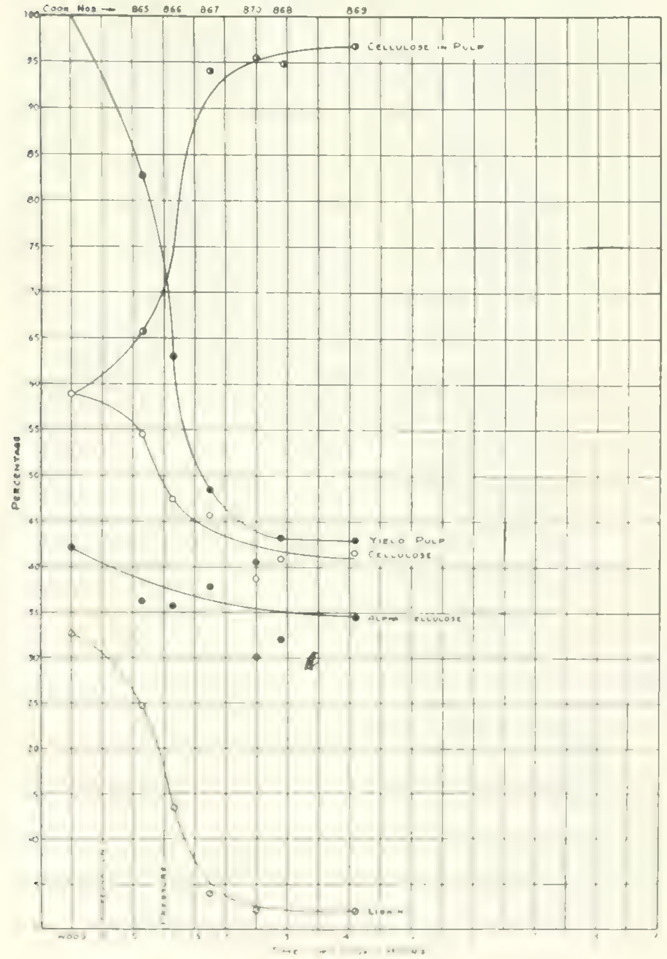


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Fig III JACK PINE SULPHATE PULP

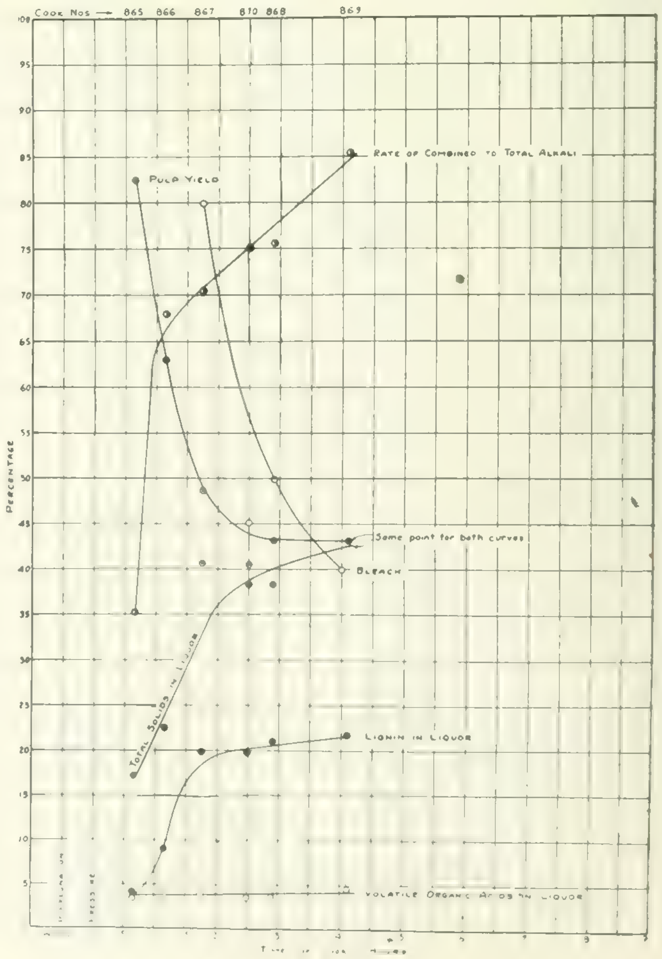


Fig IV JACK PINE SULPHATE PULP

The Removal of Electricity from Paper and Fabrics

BY W. H. CHAPMAN IN "ALFELCO FACTS"

There is one branch of electrical science, the oldest known of any and yet which stands up to the present time the most neglected and least developed of any, and that is the branch known as static or frictional electricity.

About 600 years B. C., Thales, the Greek Philosopher observed the attraction which amber exerts on light substances, and called it suction. For centuries this has also been known to be true of other substances like sulphur, fur, silk, wool, and paper. These substances are classed as insulators because they can retain a charge for a considerable time. As a sponge or blotting paper soaks up water and retains it, so these substances pick up charges of electricity and retain them sometimes for several days or even for weeks in a dry atmosphere.

It is the easiest thing in the world to excite charges of electricity in these insulating substances. Friction or bending or pressure between the rollers of a machine will do it, and will charge them so that they will draw all the dirt and lint in their neighborhood on to their surface and will also cause them to suck firmly on to any other solid surface, and in the case of wool or silk or of cotton it drives the fibers apart by repulsion, and so interferes greatly in all the processes of manufacture of these materials.

For 50 years back this has been a serious hindrance in the manufacture of paper and cotton, woolen, and silk goods. Competition has kept calling for more rapid production and with increased speed of machinery the difficulty has increased until in some industries static electricity has become the limiting factor that curtails the production, in some cases 50 per cent or more.

It is a curious fact that men have known for centuries how to generate electricity in insulating substances, but that up to the year 1904 no means was known for its quick and complete removal. It is the writer's good fortune to be the pioneer in this new art of removing static electricity. As the pioneer I find myself in undisputed possession of a principle so simple and self-evident that it seems very strange the discovery was not made before. It is the one method of nature for doing it, viz.: In the presence of two opposing charges, as in alternating current, a charged body spontaneously selects the kind and quantity to exactly neutralize itself. The reason is simple: like kinds repel and unlike kinds attract each other; therefore in an alternating current where both kinds exist the charged material will find its affinity satisfied. But for the process to take effect, of course it is necessary to get the insulating material into conducting communication with the alternating current. This cannot be done by contact of the material with the alternating conductor and it doesn't need to but we make use of the peculiar property of a pointed conductor, by which the atmosphere in its vicinity is rendered a conducting medium. Ordinary air is a very poor conductor, but when ionized it is a good conductor for electricity of high voltage. Now if we put an alternating charge of high voltage on a pointed conductor, the air right at the point becomes ionized; that is, the minute particles of air, something finer than atoms, become charged and act as carriers and are fired like charges of shot at high velocity out into the surrounding atmosphere, so the atmosphere becomes filled with positive ions and with negative ions separate from each other, ready to move this way or that at the slightest attraction or repulsion that the charged material may exert upon them, so if the material is positive the negative ions rush to it and neutralize it while the positive ones are repelled away into space and wasted; and on the other hand if the material is negative, the positive ions rush to it and neutralize it and the negative ones are wasted in space. Whatever the charge in the material may be, whether positive or negative, it finds its affinity satisfied and perfect neutralization is the result.

In the year 1899, I was invited by the Y. M. C. A. of Portland to give a public lecture at their hall on Electricity, illustrated by numerous experiments. My early experiments in static electricity at once suggested themselves to me as a proper element to put into such a lecture to obtain the spectacular effects needed to hold the interest of a general audience, and accordingly a lot of apparatus was constructed to make a display of atmospheric discharges. A large part of this lecture apparatus was of no earthly use to any one after the lecture, as it had no bearing on any practical work, but the apparatus was nevertheless kept. In 1904, a letter came from a paper bag manufacturer complaining that his production was curtailed one third by static electricity in the paper bags. He had tried all known means but failed of relief and appealed to me. The lecture experiments of 1899 occured to me and I saw the solution of the problem at once, and within 5 minutes had made a positive demonstration of it with some of the old lecture apparatus which had lain in a corner of my office all those years of no use for anything.

I reported to the bag mill with a complete cure for all their troubles and the process was quickly adopted and is to-day an indispensable part of the equipment of the mill.

All pioneer work is beset with difficulties and special problems which have to be met and worked out for the first time, and this principle, simple as it is, has been no exception. In the first place a transformer had to be designed which would give about 12,000 volts but at the same time would not give an injurious shock to a person who might by accident get the whole current through his body. This was readily accomplished and I was making a practice of testing every transformer before shipment passing its total current through my own body to p its harmlessness. But this did not seem to satisf other fellow and furthermore, although it wa difficult even purposely to set fire to such su as paper and wool with the largest current o from one of the transformers, yet the other fellow said it must not set fire to gasoline. This was a pretty hard problem to solve, but it has been done. The problem resolved itself into this—the current of the transformer must be so finely subdivided that it would be impossible for any one of the active points concerned in the process to receive enough of the current to set fire to gasoline and yet it must have enough to produce the ionizaton of the air on which the process depends. This is now accomplished by what is known as the type U inductor. This consists of a steel tube 1 1-2 inches diameter having a slot on one side extending from end to end. The slot is filled with little porcelain blocks. Each block has in it a copper sleeve with a point attached. The point projects through a hole flush with the outside surface of the porcelain, while the sleeve surrounds a well-insulated cable that passes through the center of the tube. Each point then receives its charge by induction from the cable and can only receive as much as is due to the surface of the sleeve. The surface of the sleeve being small the quantity of the charge is limited, while the voltage or pressure of the charge is kept at full value. This inductor is placed across the machine to be treated, where the material can pass by it at a distance of two or three inches. The action is so quick that the material may be moving a thousand feet per minute and yet the inductor gets in its work and the material passes away in a perfectly neutral condition.

DON'T FEAR STRANGE IDEAS

Don't be too hard on the man with the idea that seems strange to you and your neighbors. If it has merit it may come into general acceptance in your own lifetime; and if it hasn't, it's pretty sure not to do you any harm.

Charles Goodyear, who, by showing us how to vulcanize rubber, did as much as any one to make possible the automobile of today, was publicly denounced as insane from the pulpit of the church he attended.

Daguerre, inventor of the daguerreotype, was put in an asylum for saying he could transfer likenesses to pieces of tin plate.

When Franklin offered accounts of his experiments in electricity, the learned societies of Europe rejected them as of no scientific importance.

Bankers threatened to call in their loans and close George Westinghouse up unless he would abandon his "foolish notions" about alternating current.

Galileo discovered the telescope and got away with it. But when he pulled that one about the sun standing still, and the earth revolving, the authorities put him in jail until he was ready to make a recantation in the public square; and as he arose he is said to have muttered, "It revolves, just the same."

In his long journey from Montreal to the mouth of the Mackenzie river, and again to the Pacific ocean, made respectively in 1789 and 1793, Sir Alexander Mackenzie, while faithfully noting the condition of the country through which he travelled, mentions only thirteen places where the forest had been destroyed by fire. The past one hundred years, with the settlement, railway construction, and increased travel it has brought, has wrought such a change that anyone who followed Mackenzie's route across the continent could hardly lose sight of the vast brulés since created.

EDUCATING THE WORKERS

By WARREN B. BULLOCK, Information Service
American Paper & Pulp Association

The paper mills of America employ about 150,000 wage earners.

Every individual of this army, man and woman, youth or adult, is affected by the campaign among the manufacturers, the employers, for better education of the workers.

Every individual is to be made a better worker, and thereby given opportunity for advancement or promotion, under the vocational educational campaign of the employers in the United States and Canada. Over $40,000 has been expended by the manufacturers in the preparation of the text alone for a series of books to be used in this educational work. Probably no American industry has ever undertaken a greater piece of work for the technical training of its employees in their own industry than this task, which has been briefly outlined above.

The work has been under way for three years, nearer four years than three, and the results of the preparatory work are just being made available to the men and women in the mills. Classes are just being organized in some of the mills, others are only preparing to establish classes, but eventually the plan is to have vocational education available through the most modern and up-to-date methods, for every worker in the industry.

It was over three years ago that the work was begun. Paper manufacturers on both sides of the international boundary contributed to a fund to engage editors special writers and other experts, for the preparation of the text book material. Today the third of the five contemplated volumes has been published and the other two will soon be available for use. The fund of $40,000 has not been enough to do even the preparatory work, but the balance needed is being secured by additional subscriptions.

Several states have undertaken to co-operate with the paper industry by making their university extension specialists available for the teaching of these courses. Some states are backward, not yet having begun actual use of the text books. The movement is growing, however, and this year there is class work in progress in most of the paper-making states.

The actual organization of the work of preparation of the text books now being published has been handled through the Joint Educational Committee of the Technical Association of the Pulp and Paper Industry in the United States and the Technical Section of the Canadian Pulp and Paper Association. The Technical Association is an associate member of the American Paper and Pulp Association, from whose members have come the major portion of the funds secured for the publication of the text books. With the two parent associations on both sides of the border backing this endeavor, the vocational education movement in the paper industry has the strongest possible organized support.

When the time came that the text books were nearing publication, J. C. Wright, director of the Federal Board for Vocational Education, was engaged by the joint committee to make an industrial survey of the industry, in preparation for the actual use of the text books, when they should be available for distribution.

As a result of this study, Mr. Wright recommended both technical and trade training. He also laid out a schedule of unit courses for the training of the employees for promotion along the normal line of advancement, to prepare them for advancement when the opportunity might come.

WILL FOREMEN STUDY?

By B. M. NUSSBAUM

(In *Textiles*)

While the following article refers to experiences in the Textile Industry, the results correspond to the testimony the editor has received from many pulp and paper men. Human nature is the same in both industries and we have here a valuable lesson from brother industrialists.

* * *

Will factory foremen study? The question is an important one. for I find some mill managers and superintendents who offer it as an objection to foremen training.

"You cannot master any subject without study," said the managing agent of a large knitting mill, "and the average foreman won't study. He'll enroll in a course to please the management, and go through the motions of attending lectures, perhaps; but when it comes to buckling down to a study program, he simply isn't there. He's not accustomed to study. He has only a grammer-school education, study habits were never fixed in his experience, and you can't make him go back to school at his time of life."

Some Manufacturers' Opinions

An executive in another mill expressed this opinion: "The improvement of foremanship lies in the education of future foremen. Don't waste time and money trying to make over those who are already "sot" in their ways, but concentrate on the promising young operatives from whom the future overseers, supervisors, foremen, and second-hands are to come."

Both of these criticisms have some fundamental truth. An educational program which does not call for study is not likely to be very far-reaching in its effect. And it is a problem to get grown-up men to submit to the discipline of study. Moreover, it is a good policy for the management to have its eye on possible material and to begin to train these future foremen as early as possible. But admitting all this does not mean that the present generation of foremen are to be neglected, or that the task of getting them to study their own jobs is an impossible one. Foremen's courses have been conducted successfully in dozens of American factories within the past three years, and at the present time I know that classes are being conducted in several mills with marked results.

The following figures are taken from the records of foremen training in fifteen companies, and show the percentage of those who enrolled for the training and followed it through the three months course to completion was 73 to 100 per cent.

The educational program conducted in the plants referred to was a standard course in foremanship. The requirements were not merely attendance at lectures or conferences, but the actual completion of a given amount of written work. To do the written work, the foreman had to master the text books of the course; in other words, he had to study. The figures at hand show that out of 996 men who began the course, 873, or 87 per cent. actually studied it. This is a truly remarkable record. Few university classes will show a higher percentage of completion. This does not mean that foremen will study anything. I have no doubt that the gentlemen quoted at the beginning of this article are right in their conclusions, granted the particular experience and observation which have been theirs. I know of one case in which the foremen rebelled against a training program, and their refusal to take the course that had been laboriously planned for them resulted in the resignation of a well-intentioned but somewhat inexperienced educational director. The foremen in this case — and rightly so, I think —refused to submit themselves to an elaborate study-program that involved mathematics, mechanics, economics, psychology, and other formidable subjects. It was too much for them, and they knew it; and the course which had cost the company considerable money to prepare, had to be abandoned.

Program Must Be Educational

Foremen will not study anything and everything that a benevolent management lays out for them. But they will very gladly join in an educational program, and actually study, under two conditions:

1. If the course is interesting and practical and adapted to their educational needs and limitations, and

2. If it is backed up by the live interest and active co-operation of the management.

If these two conditions are met, I believe any group of foremen can be stimulated to study, to the great gain of themselves in their work and to the great gain of the mills in better production, reduced spoilage, lowered labor turnover, and improved human relations within the entire organization.

The first essential is that the course be suited to its purpose. The purpose of foremen training is not to instruct foremen in technical processes, in the details of spinning, weaving, knitting, or other operations, or in the intricacies of equipment. Usually the foreman is already well-informed in this direction, and is not attracted toward a rehash of what he knows or thinks he knows. On the other hand, it is a mistake to conceive of foremen training as calling for a university extension course in the arts and sciences.

Improves Mill Management

The big purpose of foremen training is to improve the foremanship of the mill. That means better handling of men, raising the level of co-operation within the departments and between departments, and in general promoting the teamwork of the mill. To be sure, this requires some attention to economics, mechanics, psychology, and other applied sciences; but the presentation of these subjects in a well organized foremen's course is vastly different from the method pursued by the typical academic educator.

Some people think that text-books are unnecessary. That depends on what you want to accomplish. If the idea is simply to provide some casual stimulus and entertainment, let the text-books go. But if you want to impart a sound and lasting knowledge of principles, you will find that this can only be done through prescribing a certain amount of text study.

The text material must be organized from the foreman's angle. You cannot depend on the ordinary text-books of economics, mechanics, and psychology; they are too abstract and too involved to hold a foreman's attention long. You must provide text-books written especially for him. They must talk about concrete cases, with illustrations taken from actual experience in textile mills or other industrial plants. The foreman is intensely practical, and every principle taught must be presented in terms of how it works out in the mill.

Then there should be lectures to reinforce the text-books. The lecturer can give local application to the teaching of the texts. He can clear up points, answer questions, and guide discussion. It goes without saying that the lecturer must be more than a speaker, more than a technician. He must be a human sort of person, for his chief function is to keep the course vital and interesting. He must have the qualities of a leader, and be warmly sympathetic and friendly in his relations with the men.

Conference After Lectures

Another feature is a group conference at the end of the lecture. In some mills, because of their remoteness from training headquarters and the consequent difficulty of getting competent lecturers, the plan of self-conducted weekly conferences has been used. This has proved successful in many cases, and if handled by a capable class leader will drive home the points of the teaching and provide a valuable forum for the discussion of foremanship problems. But where it is possible to provide lecturers, the group conference is not to be regarded as a substitute for the lecture, though it should always supplement and reinforce the lecture.

The final requirement of a course adapted to foremen is that it secures a certain amount of written work on the part of the foreman-student. This is necessary not only to check up and make sure that he is really following the course, but also to give some practice in applying the principles and methods taught. The problem method is the best device I know for providing this check-up and the necesesary pactice material. At the end of each section of the course a practical mill problem is stated and the student is called on to write out his solution. For example, a difficult complication in human relations within a department will be outlined. All the conditions are described in detail. Then the foreman is asked, How would you handle this situation so as to relieve the friction and promote the efficiency of the department?

To summarize, we note these four elements as essential to a successful course: (1) Text-books written from the foreman's point of view and in simple language, embracing only the fundamentals of modern foremanship; (2) lectures to amplify and apply the teaching of the text; (3) group-conferences to develop discussion, raise and answer questions and promote interest; (4) problems calling for written work by the foremen in applying the principles and methods to modern mill conditions.

The other "if" that must be met in order to enlist foremen in the training is represented by the attitude of the management. Foremen will support a well-organized course if the management shows full confidence and interest in the undertaking. It is not enough for the management merely to offer the training. The best results have been accomplished where executives have joined with the foremen, attended the lectures sat in at group meetings, and participated in the work.

I remember an experience in an Eastern mill. A meeting of the department heads was held to present a training progam. The president, addressing the meeting, said the company had arranged to make an educational opporutnity available to them. He supposed it was a good course, for it had been used, apparently successfully in other mills. The company was willing to provide the training for any who wanted it. But they must distinctly understand that each one who took the course did so entirely on his own responsibility. Anyone who cared to enroll could sign up after the meeting.

Executives Must Show Confidence and Interest

The material result of this chilling statement was that of the 76 men present, three volunteered to take the course. If that president had shown his personal confidence in the program, if he had believed in it and told the foremen so, I venture to say that at least three-fourths of them would have come in. This is the usual proportion whenever the management gives its cordial support. This does not involve the slightest coercion or discrimination against the man who declines to enroll, but it does involve *leadership*. In education as well as management, the executives in a plant have to take the lead. The foremen will not seek opportunities for self-improvement, except in rare instances. But if the management will show a real interest, most foremen will fall into line eagerly and make the most of the opportunities offered.

Mill Superintendent Joins Study Class

I know many instances in which the mill superintendent joined with his foremen in one of these study groups. In one company where foremen classes were organized in four mills, the superintendent of each mill enrolled and faithfully followed the course. One of the best groups I ever saw — one in which every man who enrolled stuck through to the end and finished all requirements — was a class which included not only the foremen but the vice-president of the company and the superintendent of the mill.

Executives who participate in foremen classes do not find the experience boresome. "It was one of the most stimulating experiences of my life," said one superintendent at the end of the course, "and a regular eye-opener. I know my foreman better now, and because of our common background of training we can discuss problems together more understandingly."

The answer to the opening question is obvious. Your foremen will study if you provide a training-course adapted to their needs, and if you join with them sincerely in the enterprise.

The extreme simplicity of "squirrel-cage" motors make them ideal where the starting duty is comparatively light and where no speed variation is required. They are started with compensators, and in many cases a meter is added to indicate the load.

PULP AND PAPER NEWS

The Great Eastern Paper Company, Madeleine River, P.Q., under the charge of Mr. C. W. Mullen, is now turning out groundwood.

Mr. W. B. Carmichael, of W. B. Carmichael & Co., with offices in Sydney, Melbourne, and Auckland, is now on a visit to Canada in connection with the firms business as representatives in Australia and New Zealand of Canadian paper mills.

The members of the Toronto Board of Trade have chartered the steamer "Richelieu" for a trip to the East. The program includes visits to the Mille Roches mill of the Provincial Paper Mills, Limited, and of the Cornwall mill of the Howard Smith Paper Mills, Ltd.

The Becker interests have under consideration the revival of some development plans which were laid aside in 1920, owing to the depression in the pulp and paper business. We understand that these plans include the construction of a very large newsprint mill at Chicoutimi. In another column will be found particulars of a proposed railway project which, if it materialises, will enable pulpwood to be brought from limits on the Peribonka to the pulp mills at Chicoutimi and Port Alfred.

The annual picnic of the employees of the Rudd Paper Box Company, Limited, Toronto, took place on Saturday June 16 to Port Dalhousie. The outing began in the morning when a boat conveyed about 125 of the employees and their friends across the lake. There was a full day of sports and other pastimes at the Port and in the evening the company provided a supper at which Superintendent G. Garnette, who is leaving shortly on a trip to England, was presented with a steamer trunk by the employees. The prizes won in the athletic events were presented by President W. P. Bennett also at the evening meal. There was a burlesque band and a lot of other stunts and the whole affair demonstrated the fine feeling which exists between the company and its employees.

Joseph Thompson, of the Lagan, Swift & Brigham Division of the United States Envelopes Company, Worcester, Mass., called on the Toronto paper trade last week.

Jack Ebbels, of the American Writing Paper Company, Holyoke, Mass., was a business visitor in Toronto last week.

T. J. Allan and Jack Hewitt, of Paper Sales, Limited, Toronto, have returned after a business trip to New York, during which they visited the Brooklyn factory of the Arabol Manufacturing Company, Paper Sales being the Canadian representatives of the Canadian plant at Brampton, Ont.

David R. Robertson, of Montreal, General Manager of the Canadian Paper Board Company, Limited, was a business visitor in Toronto last week.

Business visitors to Toronto last week were Frank Thorne, of Price Brothers; Superintendent Ball of the Jonquiere mill of the company and J. D. Falkenburg of the paper sales department.

Graham Brown, of Montreal, has joined the sales staff in Toronto of the Howard Smith Paper Company. Mr. Brown, who is a graduate of McGill University, has just recently broken into the paper game.

The Ontario Government are calling for tenders for the right to cut pulpwood and timber on the area situated in the watershed of the Trout and Chapleau Rivers in the District of Sudbury, comprising an area of about 1,049 square miles.

Joseph Benson, aged 30, and employed by the Toronto Waste Paper Company, 19 Edward Street, Toronto, was killed on June 13 while engaged in loading a truck load of paper onto a car at C. N. R. freight sheds Simcoe and Wellington Streets, Toronto. The unfortunate young man was caught between the truck and the car and was crushed to death.

C. Howard Smith, head of the Howard Smith Paper Company, brought honor to himself and the Canadian paper trade generally in Toronto last week when he was elected President of the Canadian Manufacturers Association at the annual convention of that body held at the King Edward Hotel.

The Lawrason-Doughty Company, Limited, paper bax manufacturers, expect to be in their new paper box factory they are building on Hamilton Street, Toronto, about July 1st. The building is practically completed and is now being equipped. The firm have been operating on Church Street, Toronto.

O. H. Moore, General Manager of Hinde & Dauch, board manufacturers, Toronto, has been spending an enjoyable holiday in the Adirondacks and along the Maine Coast.

E. J. Robertson, Manager of the National Slag Products Company, Hamilton, Ont., was in Toronto last week seeking the interest of paper men in a new process of de-inking and de-fibering waste paper in the manufacture of pulp.

C. N. Ramsay, of Ritchie & Ramsay, Toronto, has dropped the worries of the paper business for a time and will spend a few weeks with his family at their summer home at Eastbourne, on Lake Simcoe.

F. G. Lancaster, formerly with the Maritime Paper Company, Moncton, N.B., which has been taken over by the Federal Paper Company, Montreal, has joined the sales staff of the Canada Paper Company in Toronto and will divide his time between Toronto and Montreal. Mr. Lancaster was a former representative of the Canada Paper Company in the Maritime Provinces.

H. F. E. Kent, Toronto, President of the Canadian Pulp and Paper Association, states that all book and writing mills are operating close to capacity at the present time and he also says that there is a gradual improvement in the envelope manufacturing trade. As far as the manufacturing stationers are concerned this is the quiet period for them. Mr. Kent, speaking of conditions in the pulp and paper arena generally, said that the outlook was bright. In connection with the proposed prohibition of the export of pulpwood from private lands, which is being considered by the Federal Parliament who will appoint a commission to investigate the matter, Mr. Kent, speaking for himself personally, and not as an official of the Pulp and Paper Association, stated that he was strongly in favor of the manufacture of all pulpwood on private lands into pulp and paper in Canada. He did not believe in the export of raw material, stating that the Dominion possessed wooded resources which, if used to their fullest extent at home, would tend to make Canada the leading pulp and paper country of the world.

A. R. Coffin, president of the Truro News Publishing Company, Truro, N.S., and his superintendent, S. C. Parks, were in Toronto last week on their way tc Ottawa.

Secretary-Treasurer S. J. Frame, Toronto, has sent out the programmes for the Eighth Annual Convention of the Canadian Paper Box Manufacturers' Association, which is to be held at the Clifton House, Niagara Falls, Ont., on June 25-26. The convention will open on Monday morning, June 25 with an exchange of greetings and the annual address by the president, C. Winter Brown, of the D. F. Brown Paper Box & Paper Co., Ltd., Coldbrook, N.B. In addition to the routine reports there will be a talk on costs by a representative of Ernst & Ernst, (Buffalo branch) including cost demonstration of a man's shoe box. D. H. McDermid, of the Somerville Paper Boxes, Limited, London, Ont., will read a paper on "Sanity and Poise in Competition", and C. T. Reid of Charles Reid & Co., Hamilton, will lead in a discussion in "Everybody's Hour". Other features at the various sessions will include the following: "Bonus and Incentive System," paper by A. B. Green, of the Dominion Envelope and Cartons. Limited, Toronto: "Competitors, Yet Partners in the Industry," paper by Charles V. Syrett, of the Victoria Paper & Tfine Co., Limited, Toronto; "Competition in Montreal", paper by J. L. Constantineau, of the King Paper Box Company, Montreal; "Stimulating the Demand for the Paper Package," paper by L. P. Morrison, of the Automatic Paper Box Company, Toronto; "Accidents," paper by F. W. Fisher, of F. W. Fisher & Co., Toronto; "Training to Make Quality Boxes", by George O. Slingerland, of Mechanicville Paper Box Co., Mechanicville, N.Y.; "The Marking Act — Its Effect on the Paper Box Industry", by James Northey, of the Telfer Paper Box Co., Ltd., Toronto; address on "The Outlook for Canada," by Rev. Canon Cody, Toronto. A couple of banquets have been arranged for and there will be a number of other features of entertainment to brighten up the business of the convention.

In the matter of the will and estate of the late Sir William Gage, head of the big Toronto manufacturing stationery house of W. J. Gage & Co., Limited, the courts in Toronto have given direction for the trial of certain issues. The main issues in question are whether Lady Gage is entitled to dower in addition to benefits under the will; whether the National Sanitarium Association is entitled to the delivery of certain bonds for $98,566.51, and interest, being the balance of a subscription of $160,000 made by the late Sir William Gage in February, 1914, and whether a daughter is entitled to receive from the estate all money expended by her on the purchase of No. 136 Jewett Parkway, Buffalo, under an alleged promise by her father.

CHARGE DUMPING NORWEGIAN KRAFT IN U.S.

Washington, D.C., June 8. — That the dumping of kraft paper from Norway has been working a hardship upon American paper manufacturers was combatted by representatives of importing companies in a hearing before McKenzie Moss, assistant secretary of the Treasury here today. The American Paper and Pulp Association and independent manufacturers of kraft paper were represented, while Wilkinson & Brothers were represented in person and by counsel.

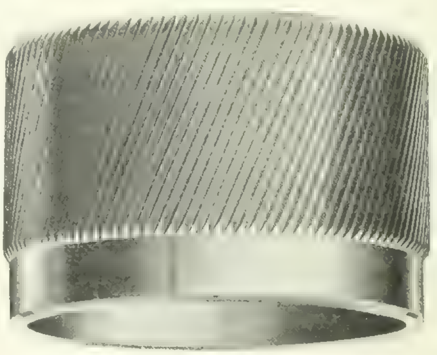
The importers based their claim that there was no dumping of figures tending to show that Norwegian kraft paper was a minor element in the situation.

The domestic paper manufacturers, however, pointed out that they had submitted definite evidence of the sales of paper in this country at prices which were below the current prices in Norway.

The customs authorities showed that sales of Norwegian kraft in this country were made at 17 per cent. below the current prices in Norway, this being conclusive evidence of dumping, even when based upon the figures of the consular invoices. Later they had made special investigations, and found that the invoice prices were higher than the actual current prices in Norway, thus increasing the spread between the Norway prices and those for which imported kraft was sold in this country.

A NEW TYPE OF BURR

The International Burr Corporation of Canada, Belleville, Ont., is now manufacturing a new type of burr for groundwood pulp stone that was invented by Mr. Frank B. Potter, superintendent of the DeGrasse Paper Company. It will be noticed on the illustration that this burr which fits on a regular spindle has a band or depressed shoulder at one edge. This serves two purposes. In the first place, with the band leading the burr, it rolls off the high spots on the stone and thus reduces the amount of slivers and chop and consequently produces a more uniform quality of pulp. In the second place, the band controls the depth to which the burr will cut into stone, and with a uniform cutting action, we have another factor in maintaining uniformity of the product. Without some such gauge as is thus provided, it is difficult for the attendant always to get the same depth of cutting, and uniform dressing of the stone. The general superintendent of a large paper company in New York State testifies that the use of this burr has increased production per horse-power per grinder, that it will dress stones very rapidly, that it reduces sliver waste and maintains the stock uniform and with desired freeness.



It takes a consistent life to witness in the home circle. Sometimes we are dumb there because they know us — the more's the pity!

NEW BRUNSWICK NEWS

The ground wood pulp mill of the Bathurst Company Limited at Bathurst, N.B., has been completed after but eight months of construction. The start on the construction of the paper mill was made last October, and the operations continued without abatement through the terrible months of December, January, February and March. The machinery and other equipment are being installed in the building, and it is expected that production will be started the latter part of July. A record is claimed for speedy construction as far as paper and pulp mills are concerned.

Until the beginning of construction on the new paper mill, the Bathurst Company, Limited, had confined its attention solely to sulphate pulp, for exportation to the United States and to Europe. This company also maintains three saw mills at Bathurst and controls vast tracts of Pulpwood areas along the Nepisiguit and Restigouche rivers in northern New Brunswick. The new paper mill and all of the industries owned by the Bathurst Company Limited, will be operated by hydro-electric current obtained from the hydro-station at Great Falls on the Nepisiguit River. This development work was undertaken by the Bathurst Company, Limited, under the supervision of the New Brunswick Government, being the pioneer of hydro development work in the Maritime provinces.

The Bathurst Company, Limited, was formerly known as the Bathurst Lumber Company. At the present time the company is fighting the attempt of the New Brunswick Workman's Compensation Board to collect a levy against the company. The company through the president and general manager, Angus McLean, charges that the board is extravagant, and that the expenses are too high, the manufacturers being forced to carry the burden. Although the decision of the New Brunswick courts have hitherto gone against the company, the concern has not relinguished efforts to defeat the aim of the board to collect the levy. The company has in operation a compensation scheme for its employees, and on this ground as well as others claims exemption from the provisions of the New Brunswick Compensation Act.

The pulp mill of the Bathurst Company, Limited, at Bathurst has also been enlarged so that the capacity has been increased one third. The company has also built docks in Bathurst harbor in the Bay of Chaleur, these docks being utilized for transatlantic steamers as well as sailing vessels. Shipments to Europe have greatly increased, and a substantial increase has also been reported in the shipments of pulp to the United States.

MAKING PULP BOARD PULLEYS IN EDMONTON

The Pulp and Paper Magazine is in receipt of an interesting sample of pulpboard made from waste paper that is being produced in a small plant in Edmonton, Alberta. Mr. George K. Guild, who has had many years of experience in the working up of waste papers and other pulp in Scotland, has established this industry, and is producing a very high quality stiff board for making a number of industrial products. One of the most interesting items on his list is a pulpboard pulley, the excellence of which is testified by the decision of the Edmonton Iron Works to place these pulleys throughout their plant.

CONTRACT AWARDED FOR NEWFOUNDLAND DAM

Sir W. G. Armstrong Whitworth & Company, Limited have just awarded a contract to William I. Bishop Limited of Montreal, Canada, for the design and construction of a hollow reinforced concrete dam, about 1,080 feet long and 75 feet high on Junction Brook near Grand Lake, Newfoundland.

This dam is part of the power development scheme in connection with the new 400 ton paper mill that is to be built at Corner Brook, Newfoundland. The purpose of the dam is to create storage in Grand Lake by raising the water level about twenty feet and increasing the area from about 130 square miles to 180 square miles. The Power House is situated on the shore of Deer Lake, the water being carried to same by means of a canal about eight miles long and penstocks about four thousand feet long; the resulting head being about 260 feet.

Several different designs of dams were considered for the main dam of Junction Brook and after careful consideration of the conditions at the site and the relative cost of the different schemes, William I. Bishop Limited were instructed to design a hollow reinforced concrete dam for this site.

The dam which will also carry the railway (the present location being flooded out by the raising of the water in Grand Lake) consists of buttresses spaced 18 feet apart with a sloping deck on the upstream face of same. The reinforced concrete section is 740 feet long and the remaining 340 feet at the ends will be a gravity face wall with earth fill behind it.

A spillway section sixteen bays or 288 feet in length has been provided and is a full apron section with a hearth of reinforced concrete about two feet thick carried downstream below the dam to prevent scour, as the rock at the dam site is a stratified sandstone and rather soft. The water level will be raised five and a half feet above the level of the spillway by means of structural steel gates, which can be raised to allow the floods to pass.

Work on this contract will commence immediately and the structure is to be completed by September 1st, 1924.

William I. Bishop Limited have also been awarded the contract to drive 2,000 to 3,000 Raymond concrete piles for the mill foundations at Corner Brook.

SHLICK BEATER ATTACHMENTS IN CANADA

An announcement that will interest the pulp and paper industry of Canada is to the effect that the Sherbrooke Machinery Company Limited of Sherbrooke, Quebec have been appointed exclusive representatives in Canada with maufacturing rights for the Leo Shlick Beater and Beater Attachment. Mr. Shlick is a competent engineer who has made a special study of the beating operation and the equipment necessary to bring about the most economical and efficient result. By means of Mr. Shlick's attachment, it is possible to convert the old-fashioned Holland Beater into a modern piece of efficient paper mill equipment.

A lot of men get the idea that they are breezy, when they are merely windy.

Technical Section

REVIEW OF RECENT LITERATURE

Properties and Testing of Material & Products

A-4 H-1 Determination of the Bleach Requirement of pulp. BJARNE JOHNSEN and JOHN L. PARSONS. **Zellstoff U. Papier** 2, No. 11, 258 (1922): **Pulp & Paper** 21, 53-55 (Jan. 18, 1923). The authors put forward the following method. Disintegrate 10. g. of pulp (bone dry basis) in a small amount of water in a 500 cc. wide-mouthed glass-stoppered flask, add sufficient water to make a total of 225 cc. (including that present in the pulp, warm to 25° C. on a water bath, add 25 cc. of normal potassium permanganate solution, stir, allow to stand for one hour at 25° C. with frequent stirring, close the flask, stir vigorously, remove about 100 cc. of solution, pipette off a 10—cc. aliquot from this into an Erlenmeyer containing 10 cc. of decinormal oxalic acid diluted in about 100 cc. of warm water and acidified with sulphuric acid, and titrate with decinormal permanganate. The number of cc. required is called the permanganate number. The method was compared with Sieber's "chlorine consumption number" [**Pulp & Paper** 19, 866, 1921); 20, 438, 654, 956, (1922); **Paper Trade J.** 74, No. 21, 60, (May 25, 1922); 75, No. 6, 54, (Aug. 10, 1922); No. 19, 55, (Nov. 9, 1922), with Tingle's "chlorine factor" **Pulp & Paper** 20, 480, (June 8, 1922); **Paper Trade J.** 74, No. 24, 511, (June 15, 1922), and with a so-called "standard method" of determining the amount of chlorine required to obtain a pulp of the same color as the usual bleached and dried commercial pulps. A factor was worked out for each pulp for converting each of the respective "numbers" to "standard" bleach consumption. The "chlorine consumption number" and "permanganate number" were found to increase fairly regularly with increase in bleach consumption, while the "chlorine factor" of various easy bleaching pulps was practically constant, while hard pulps had a constant factor different from that of the easy bleaching samples. Sieber's and Johnsen's methods are considered valuable for works' control, provided due consideration is given to the conditions in the particular mill in which they are used and the proper factor is worked out for the grade of pulp manufactured. Tingle's method is considered promising for scientific investigations.-A.P.-C.

Pulp Testing

A-4 Determination of the Effect of Pressure on the Strength of Test Sheets in the Strength Testing of Pulp. E. P. CAMERON. Forest Products Laboratories Montreal, Can. **Pulp and Paper** 21, 172-134 (Feb. 1, 1923); **Paper Mill** 47, No. 6, 14, 16, 18, 20, 38, 40 (Feb. 10, 1923). The author gives a very detailed description of tests which showed that: The strength developed is independent of the length of time the pressure is applied (within the limits of the speed of the machine use). The strength increases with increase of pressure applied, other conditions being constant. This increase in strength is more marked at the lower pressures used and on the lighter basis weights of sheet. The strength varies inversely with the basis-weight, other conditions being constant. The strength varies independently of the moisture-content before pressing. For the pressures used 75% was found to be the optimum. The author concludes that it is imperative that the basis-weight of the test sheets used and the pressure applied in their formation should be accurately specified in any standard method for the testing of pulp for strength.-A.P.-C.

A-4 The Study of Paper Making Materials. A. B. GREEN, **Paper Trade J.** 76, No. 15, 223-229 (Apr. 12, 1923); **Paper** 31, No. 26, 97-102 (Apr. 18, 1923). Comparing the work of the American Society for Testing Materials with that of TAPPI, the author states the latter has been developing means of measuring the properties of the finished product, and the former has built a science around its raw materials. "The need for us is to know how to express the paper making characteristics of our own raw materials quantitatively and accurately if we mean to develop the paper maker's art to its highest." He then describes tests carried out to determine the effect of different rates of power consumption of a jordan on the properties of the stock, and the effects of changes in sulphite cooking conditions on the quality of the stock produced, and shows how these and similar tests should be used to determine scientifically the optimum working conditions to obtain desired results.-A.P.-C. from p. 635.

A-4-5 Determination of the Moisture Content of Paper Pulp RAYMOND FOURNIER. **Papier** 25, 530-534 (Dec. 1922). After describing the usual method of determining moisture in pulp (drying at 100 to 105° C.), the author suggests mixing a given weight of the pulp with a given weight of a solution of known strength of a substance having no action on the pulp and determining the content of the substance. If **P** is the weight of moist pulp taken, **p** the weight of standard solution added, **q** the per cent of chemical in the standard solution, **r** the per cent of chemical after mixing with the pulp, **p** the combined weight of the solution and water in the pulp, **P'** the weight of bone-dry pulp, **T** the weight of water in the pulp, **T'** the per cent of water in the pulp, we have: $p' = pq/r$, $p' = P - T$, $T = p' - p$, $T' = 100/p$.-A.P.-C.

A-12 K-10 Emulsifying Free Rosin Size. O. KAMM assignor to American Writing Paper Co. Can. patent 226,817, Dec. 5, 1922. The size is heated with an exactly sufficient quantity of water (depending on the amount of free rosin) to form a clear emulsion of size in water at a given temperature and the resultant emulsion is diluted by pouring into a larger volume of water. The first concentrated emulsion is preferably prepared at the boiling point of the solution. Cold water may be used for the subsequent dilution.-A.P.-C.

A-12 K-10 Diluting Free Rosin Size. J. A. DECEW assignor to Process Engineers, Ltd. Can. patent 228,279, Jan. 23, 1923. Hot size containing 20 to 50% of solids is mixed with sufficient hot water (above 175° F.) to give a mixture with about 8% solids, agitating violently during dilution. The hot dilute size is then mixed with cold water, without any special means of agitation, and the more dilute it is made the more stable it becomes.-A.P.-C.

A-14 K-10 Effect of Light on Vegetable Size. L. P. ZHEREBOFF. **Paper** 31, No. 26 143-146 (Apr. 18, 1923); **Pulp & Paper** 21, 436 (Apr. 26, 1923); **Paper Trade J.** 76, No. 14, 73 (Apr. 5, 1923).-A.P.-C.

A-14 M-12 Testing of Sizing Quality in Paper with Valley Tester. J. E. ALEXANDER. **Paper Trade J.** 76, No. 15, 187-191 (April 12, 1923); **Paper Mill** 47, No. 15, 76, 78, 80 (Apr. 14, 1923); **Paper** 31, No. 26, 45-48 (Apr. 18, 1923); **Paper Ind.** 5, 331-333 (May 1923). The author comments on observations made from using the Valley size tester in daily routine and in special work. He concludes that the Valley tester cannot be used for testing the sizing qualities of different grades of paper, that in order to get a reliable test on the same grade of paper the formation and the furnish must be absolutely uniform, and the main factors influencing the results are formation of the sheet, furnish and base weight. A curve is given showing the increase in sizing tests with the increase in base weight for a hard sized paper. In discussing his results the author attributes lack of uniformity to the mechanism of the penetration of the test solution through the paper.-A.P.-C.

A-14 M-12 Ink Flotation Versus Valley Size Tester. M. L. CAUST. **Paper Trade J.** 76, No. 15, 191.193 (Apr. 12, 1923); **Paper Ind.** 5, 333-4 (May 1923). Curves are given showing the relation between the two tests. A paper tested by the flotation method shows a penetration in about 1.5 to 3.5 (average 2.5) times as many seconds as is obtained by the Valley tester. Results given show that it is possible to make a set of tests on the Valley tester and check results with an average maximum variation of about 9%, while with the ink flotation there is a slightly higher variation. When Valley tests are repeated after a few days they show far better agreement than the flotation method; but after several months they do not show such good agreement.-A.P.-C.

A-14 Routine Methods for the Examination of Wood-Pulp Adopted at the Forest Products Laboratories of Canada. E. PARKE CAMERON. **Pulp & Paper** 20, 2011-2015 (Dec. 21, 1922). A detailed description of the methods used for the determination of fiber length, strength, beater and unbeaten bleaching, bleach consumption and loss in weight, and color.-A.P.-C.

A-14 Uses of the Microscope in Paper Mills. JAMES STRACHAN. **Pulp & Paper** 21, 57-60 (Jan.18, 1923); **Paper** 31, No. 13, 7-10 (Jan. 17, 1923). An outline of the uses to which the microscope can be put for controlling processes and products in pulp and paper mills and of its possibilities as a research instrument in the industry.-A.P.-C.

Groundwood

D-1 K-1 Freeness Testing in a News Print Mill. FREDERICK W. BRADSHAW. **Pulp & Paper** 21, 375-379 (April 12, 1923. The author describes in detail the Green freeness tester and its use, and outlines the system of freeness control used at the Kenogami mill of Price Brothers. From a six weeks' test on one of the paper machines, it was found that the Green tester gives reliable information as to the draining qualities of the stock on the paper machines, and that, providing the quality and percentage of sulphite stock is kept fairly constant, the main cause of variation of the paper machine stock is due to variations in freeness of the groundwood. A discussion of the factors affecting the freeness of the paper machine stock "as run" shows that, providing the quality and percentage of the sulphite, the consistency of the paper machine stock, and the amount of white water are kept reasonably constant, it should be possible to furnish a groundwood stock whose freeness would be made to vary so as to offset the seasonal variation in temperature of the paper machine stock, this giving a uniform test for the freeness of the paper machine stock "as run."-A.P.-C.

Bleaching

H-1 The Determination of Available Chlorine in Bleaching Solutions. F. DIENERT and F. WENDENBULCKE. **Ann. fals.** 15, 338-339 (Sept.-Oct. 1922); **Pulp & Paper** 21, 11 (Jan. 4, 1923); 20, 2047 (Dec. 28, 1922); **Paper Trade Journal** 75, No. 25, 58 (Dec. 21, 1922).-A.P.-C.

H-4 Preparation of Bleach Liquor. J. H. MACMAHON assignor to Mathieson Alkali Works U.S.A. patent 1,426.752, Aug. 22, 1922; Can. patent 228,059. Jan. 16, 1923. See article by MacMahon in **Paper Mill** 45, No. 47 6 (Dec. 2, 1922); **Paper Trade J.** 76, No. 1 60 (Jan. 4, 1923).-A.P.-C.

H-4 Preparation of Bleaching Powder Solutions. J. H. MACMAHON assignor to Mathieson Alkali Works. Can. patent 228,060, Jan. 16, 1923. Bleaching powder is mixed with water in about the usual proportions, and without waiting for the solution to settle chlorine is passed through until practically all of the free lime has been acted upon. It is claimed that the resulting solution is quite stable and is more active than ordinary bleach liquor. There remains very little sludge and what does remain settles very rapidly.-A.P.-C.

H-5 Process of Bleaching. G. ORNSTEIN assignor to Electro Bleaching Gas. Co. Can. patents 226,826, 226 827, 226,828, Dec. 5, 1922.

No. 226,826. The bleaching is accomplished by means of a solution of chlorine in water of such dilution that practically all the chlorine (95—100%) is hydrolyzed to hydrochloric and hypochlorous acids.

No. 226,827. Sufficient base is added to neutralize the hydrochloric acid produced by the hydrolysis of the chlorine; and during bleaching sufficient base is added to neutralize the hydrochloric acid produced by the reduction of the hypochlorous to hydrochloric acid.

No. 226,828. Chlorine is absorbed in water. One molecule of sodium carbonate is added per molecule of chlorine (Cl_2) to convert the hydrochloric acid into chloride and form sodium bicarbonate, without affecting the hypochlorous acid. The dilution must be such as to give practically complete hydrolysis. The liquor should be used.-A.P.-C.

Paper Making

K-1 Rapid Means of Determining Stock Density. F. M. WILLIAMS. **Paper Trade J.** 76, No. 18, 50 (May 3, 1923). A weighed or measured amount of stock (or white water), depending on the amount of fiber contained, is passed through a specially designed centrifuge. After the water has been thrown out, without removing the sample, a specially designed electric heater is inserted in the center opening of the revolving

(Continued on page 638)

UNITED STATES NOTES

Exclusive distribution rights of the British patent paper film projector described in these columns some weeks ago have been assigned to the Harry Levey Service Corporation, New York City. A demonstration of the new device and the process involved was given last week at the offices of the company, 130 West 46th street. There have been several paper films developed, but this is the first to receive a public demonstration in New York. The invention, it is claimed, has been brought to the practical stage in England over a period of three years. The tests last week showed that pictures projected from the paper films will be available at once for educational use, if not for general use in motion picture theatres. The distributors intend using the device for the present in churches, schools, colleges and the home. The film is made from opaque non-inflammable paper. It is not highly combustible, is said to cost, but one-fourth the cost of celluloid prints, and can be mailed in cardboard boxes at quite a saving.

Lieut.-Col. Frederick Lawson, nephew of Viscount Burnham, and associated in the publication of the "London Daily Telegraph", sees much needless waste in newsprint paper by American publishers through practices which he believes might easily be changed. Col. Lawson is in America with the delegation of English advertising men who have been attending the meeting of the Associated Advertising Clubs of the World at Atlantic City. "You are creating a white paper famine," said Col. Lawson, "It isn't a question of sacrificing profits. Your advertising rates are much too low, according to our standards. You should get the same price for a quarter page that you now get for a full page; the advertiser would get the same results and the white paper supply would be conserved. Of course, this couldn't be done unless all the newspapers agreed to it. But the white paper situation is growing serious, newspapers are helping to make it so for themselves as well as the rest of us. I hope when we get your advertising men to London next year we can show them some vital facts about this that will help in solving the problem."

A German manufacturer has been developing a large trade in writing paper as a result of a special process which gives him decided advantages under the Mexican tariff schedule. The Mexican customs admit white paper with not more than 40 per cent. ground wood under a duty of 23 centavos per kilo, while paper containing 40 to 70 per cent. or more of ground wood pay 12 and 5 centavos, respectively. By an effective method of bleaching and sizing, a paper having a large ground wood content, this manufacturer can supply a very presentable sheet, which is popular in the market because of the low cost at which it can be landed under the above-mentioned provisions.

The American News Company is distributing to news dealers and stationers a line of "Nile" stationery, helping them to cash in on the popular interest aroused in things Egyptian since the discovery of King Tut's tomb in the Valley of Kings.

The paper car wheel that got considerable notice years ago and which was used quite extensively in railroading has again been replaced by the old reliable steel wheel, according to the "Pathfinder". The Pullman Company now reports that the paper wheel is only a memory, the last one having been dropped from its service some time ago. It was found impractical, they say, the main objection being that if a car remained stationary for any great length of time the paper core "flattened," so to speak. Originally it was argued that the paper center would not be susceptible to the expanding and contracting influences of heat and cold. It was also presumed that the paper core helped deaden the sound under passenger cars. The paper wheel retained its popularity for about 25 years. A 38-inch paper wheel encased in a three-inch tire, weighed 1,070 pounds. The present all-steel wheel which has taken its place weighs 145 pounds less than the paper articles. Common strawboard was used in the manufacture of the paper-cored wheel. About 192 sheets were damped and pressed together. This formed the block from which the wheel was made. The block was turned on a lathe until the proper spherical form was reached. Contrary to a popular idea, the whole wheel was not paper — only the inner part was.

More than 6,200,000 forest trees, or enough to reforest about 6,000 acres of land, have been planted this spring by private owners of forest land in Pennsylvania, Chief State Forester Major R. Y. Stuart states.

A report just compiled by the Salvation Army shows that through its social service department American house wives annually are saving enough waste paper to conserve approximately 9,000 acres of standing timber. The report shows that throughout the United States during the last fiscal year the Salvation Army wagons collected 55,000 tons of waste paper, the bulk of it being news print. The money received for the salvaged paper is used exclusively for the maintenance and extension of the social service branch of Salvation Army work, says the report.

Reforestation and timber conservation activities in New York State should be greatly aided through the establishment of a new ranger school at Cranberry Lake, as a branch of the Syracuse College of Forestry. A measure authorizing the improvement has been enacted and the school is to be in operation by next spring if no delays occur. It will be on 1,800 acres of forest land, where practical reforestation and the growing of trees will be taught. The protection of forests against fires, fungi and other tree enemies is part of the course now given. The new building will have accommodations for seventy students, also quarters for the teachng staff, drawing rooms and laboratories. The Ranger School is designed to furnish a preliminary forestry education to qualify forest rangers, forest guards or others needed in the management of forests.

A miser grows rich by seeming poor. The extravagant man grows poor by seeming rich.

The best manners are perfectly natural, show no sign of effort, and are never self-conscious.

ANGLO-CANADIAN PULP TRADE GROWING

Mr. G. R. Hall Caine, a director of Becker and Company, Limited, London, England, and of the associated companies, is again visiting Canada. He will not return for another month. Mr. Hall Caine has two main objects in view — one in connection with plans for the development of the Chicoutimi Pulp Company and the Bay Sulphite Company, and the other in connection with a proposal to construct a railway from Port Alfred, P.Q., into the Peribonka district, in three stages, a total of one hundred and twenty miles.

In an interview with a representative of the Pulp and Paper Magazine, Mr. Hall Caine stated that it was important for the British mills to have a sufficient supply of pulp and he was here to take steps to that end. Having regard to the recent strike in Scandinavia, and the quickened demand in England and the United States, it looked as if there would be a shortage in the supply. Some of the Scandinavian mills had cancelled orders both in Great Britain and in the United States under the "force majeure" clause of the contracts, and Mr. Hall Caine stated that a Swedish producer had cancelled, under this clause, and at the same time offered the same firm some tonnage at a higher price.

Mr. Hall Caine emphasized the point that the demand for the pulp and newsprint in England had been stimulated to a considerable extent. The price of paper had reached the point where some publishers felt justified in enlarging their editions, and also increasing their prices; other publishers had entered on circulation campaigns. There was also the factor of advertising, which was rapidly increasing. He, therefore, looked for a considerable rise in the consumption of paper, provided that the increased price of the raw material did not force up the finished product to a point where it became uneconomical for the publishers to push the sale of their papers. The extent of the demand could be judged by the fact that the British mills were fully employed on contracts up to the end of the year.

With regard to the railway project, he was asking for assistance from both the Federal and Provincial Governments, and he was optimistic as to obtaining the usual subsidy from the Provincial Government. This line was a necessary adjunct to the plans for the expansion of the companies in Canada which he represented. While the companies had considerable limits available for the Chicoutimi and Bay Sulphite mills, it was felt to be necessary to provide means for transporting wood from the limits on the Peribonka. There was no danger of any shortage of pulpwood, but the directors were looking some way ahead, and were laying plans which would make for the development of the Chicoutimi and Bay Sulphite mills. The directors desired to provide for future requirements. The directors of the companies held that the trade to be done would justify the construction of the line. There was a ready-made business in the way of transporting pulpwood, besides which the line would open up a lumber and fertile country.

Mr. Hall Caine spoke of the use of Canadian pulp in Great Britain. He stated that his experience showed that the Canadian product was becoming more and more popular, and during the last two or three years its use had largely increased. A few years ago the British mills had to be persuaded to try Canadian pulp as an experiment; after that, some of them regarded it an insurance against any possible trouble in Scandinavia, from which they drew their main supplies; while now, there was an anxiety amounting to keenness to get Canadian pulp, of which was not sufficient to meet the demand. Canadian pulp was regarded as being of a very high grade, and for some purposes was more suitable than the Scandinavian product. It must not be forgotten that for many years the English mills had used Scandinavian pulp, and naturally, some prejudice had to be overcome. At first, when some of the mills used Canadian pulp, they did not obtain good results because they did not know how to use it properly; gradually they learned the proper method to get good results, and now the mills appreciated the fact that Canadian pulp was a first-class product. The effect of this recognition was seen in the greater demand for Canadian pulp.

SODIUM SILICATE AS A SEALER

Silicate of Soda is not good to eat. In spite of the fact that it is perfectly clean, sterile and non-poisonous, no one is sufficiently optimistic to believe that it can be valuable in food products. The nearest it comes to these essential commodities is when it is used as a grease proofing material on the inside of food containers. Cartons for food products, such as butter, biscuits and spices, or wooden pails such as lard pails and barrels used to contain vegetable and animal fats and oils require an impervious coating.

Because it is both clean and economical, and because it is very easy to apply, its use for these purposes is well nigh universal. Its quick-drying properties in particular are attractive to the manufacturer who is keen to put his product through his plant as rapidly as is consistent with quality. Suppose, for instance, that the board used for making cartons had to be put through a slow-drying process such as is necessary in the manufacture of wall paper or photographic film, instead of being run through a pair of silicate coating rolls at the rate of 200 linear feet per minute without any special provision for drying,—the operation would seem pretty slow and costly. Of course, it is necessary to use the right silicate and to work it at a strength suited to the characteristics of the board to be coated, but that is, fortunately, not a difficult matter.

Or again, consider the advantage of sizing a barrel with a sterile material which dries in a few hours as compared with using a substance which because of its animal origin is a fertile field for the growth of molds and bacteria and which requires a much greater drying time.

These two instances show how much drying is a matter of conditions. The coated paper dries in a fraction of a second because a thin layer of silicate is spread on a porous material and exposed to warm dry air. The silicate sizing in the barrel requires several hours to dry because a thicker coating is needed and the ventilation inside of the barrel is naturally very poor. If you seal silicate in an air and water tight container it will not set at all.

There is no greater blessing that you can attain here on earth than peace in your surroundings and peace in your heart.

basket, which causes a current of superheated air to pass through the fibers, drying the sample bone dry in less than 5 minutes. Means are provided for quickly removing the dry sample, which comes out as a strip about 2.5 by 22 in. Ignition of a portion of this strip gives the amount of fiber.-A.P.-C.

K-7 K-23 Use of Rubber Latex in Making Paper. ISMAR GINSBERG. **Paper** 31, No. 24, 7-8 (Apr. 4, 1923). A brief discussion of the potentialities which lie in the use of rubber latex in the manufacture of paper, with special emphasis on the elasticity conferred on the paper by the rubber.-A.P.-C.

K-7 K-23 Use of Rubber in the Manufacture of Paper. RAYMOND FOURNIER, **Papier** 25, 544-547 (Dec. 1922). Brief discussion of Kaye's patent. (Compare **Pulp & Paper** 20, 699, Aug. 117, 1922; 2050, Dec. 28, 1922. **Paper Trade J.** 75, No. 4 53, July 27, 1922).-A.P.-C.

K-7 K-23 Rubber Latex in Paper. MERLE B. Shaw and George W. Bicking. **Paper Trade J.** 75,No. 26, 53-55 (Dec. 28, 1922). After briefly summing up the invention and statements made by Kaye in subsequent publications (see **Pulp & Paper** 20, 699, 2050, 1923; **Paper Trade J.** 75, No. 4, 54, July 27, 1922) the authors describe tests carried out on a semi-commercial scale on book, wrapping and writing paper, which show that there seems to be a slight increase of bursting strength on book paper, but that the variation of the other strength qualities seems to be within that of testing different runs.-A.P.-C.

K-7 K-23 American Test on the use of Rubber Latex in Paper Making. FREDERICK KAYE, **Paper Trade J.** 76, No. 9 55 (March 1, 1923); **Paper Mill** 47, No. 10, 32 (March 10, 1923). The inventor takes exception to the results of tests published by Shaw and Bicking of the U. S. Bureau of Standards (**Paper Trade J.** 75, No. 26 53-55, (Dec. 28, 1922) on the ground that the results show conclusively that the latex use was deteriorated.-A.P.-C.

K-7 K-23 Application of Rubber Latex to Paper Making. FREDERICK KAYE. **Paper Ind.** 4, 1407, 1409, 1411, 1413 (Jan. 1923). A general outline of the possibilities of the author's invention practically as soon as prepared.-A.P.-C.

K-10 The History and Development of Paper Sizing. Paper Mill. 47, No. 15, 60-236 (Apr. 14, 1923).-A.P.-C.

K-10 Ten Difficulties Experienced in Engine Sizing. E. C. TUCKER. **Paper Trade J.** 76, No. 18, 47-49 (May 3, 1923). — An address on the troubles caused by hard water, calcium salts in stock, effect of heat, acidity of back water, soft white shavings, fillers, hot dryers, suction, heating the stock, and damp paper, with suggestions as to how to overcome them, followed by a general discussion of the points brought out by the author.-A.P.-C.

K-10 Sizing of Paper. H. TH. BOHME. Ger. patent 369,058. **Papierfabr.** 21, 116 (Feb. 25, 1923). Saponifiable fats and oils are used.-J.L.P.

K-10 Sizing of Paper. H. TH. BOHME Ger. patent 364,000 **Wochbl Papierfabr.** 54,617 (Mar. 3, 1923). A colloidal solution of crude montan wax, prepared by treatment with alkali according to Ger. patent 350,622, is used.-J.L.P.

K10 Sizing and Waterproofing. CARL JAGER. Ger. 364,564. **Wochbl. Papierfabr.** 54, 907 (Mar. 31, 1923). Insoluble naphthenates are produced in the beater-J.L.P.

K-10 High Free Rosin Versus Neutral Rosin Size. E. B. BEST, **Paper Ind.** 4, 1394-1395 (Jan. 1923); **Paper Mill.** 47, No. 3, 4, (Jan. 20th, 1923). A brief discussion of the relative merits of high free rosin and neutral rosin size, showing that no general rule can be laid down. Good results have been obtained with high free rosin, low free rosin and neutral size, and each case must be judged on its own merits.-A.P.-C. (See **Pulp and Paper** 20, 699 (Aug. 17, 1922); **Paper Trade J.** 75, No. 4, 53 (July 27, 1922).-A.P.-C.

K-10 The Colloid Chemistry of Paper Sizing. RUDOLPH LORENZ. **Wochbl. Papierfabr.** 53, 4542 (1922); **Pulp and Paper** 21, 191-192 (Feb. 15, 1923). The author reviews the action of sulphate of alumina in rosin sizing, and suggests that it acts as an "electrostatic adhesive" which neutralizes the negative charges of the cellulose and rosin, thus preventing the natural repulsion of substances having like charges. He states that it is now possible to size with colloidal rosin prepared by Plauson's process (Frydlender, **Pulp and Paper** 19, 908, 1921, which is purely mechanical, there being no previous cooking with alkali; but he gives no details as to the new process.-A.P.-C.

NINE YEARS OF ACCIDENT PREVENTION WORK

The completion of nine years of Accident Prevention work, throughout the Province of Ontario, presents a record that is particularly interesting.

The fatalities and lesser accidents, within the City of Toronto, may be taken as a fair indication of the conditions in the balance of the Province.

Briefly summarized, the ninth year of safety work has been completed with sixty less fatalities in Toronto than 1913, the year immediately before we started work. This is in spite of an increase in population of 91,000, with its increased proportion of industrial hazards and an increase of 32,000 in automotive vehicles, thus having effected a saving of 759 lives in nine years of safety work, estimated in proportion to the actual increase in population. This is more remarkable when it is borne in mind that automotive vehicles, one of the greatest causes of fatalities, have increased in that time from 5,000 to 37,000 in Toronto. These statistics are for a section covering one-sixth of the population of Ontario.

SALESMEN WILL GROW AND GROW

What the paper mill executives think of the Salesmen's Association of the Paper Industry is given prominence in the newly published special report giving the addresses presented at the April convention, in the printing of the statement made by Philip T. Dodge, president of the International Paper Company at the Salesmen's banquet, in which he said:

"If there is any one thing this dreadful war, just closed has taught the world, it is the need of co-operation — co-operation based on independence in many ways, of nations one upon another, or communities one upon another, also between individuals.

"I believe that the Salesmen's Association of the Paper Industry, founded as it was, moving on the lines that it does, will be of vast importance not only to the paper industry, but through its example, to many of the other industries of the country.

"I congratulate you, gentlemen, on what you have done and I feel that this Association will grow and grow, and that it will be of vast benefit to the country at large."

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 19. — The past week has been characterized by a slight improvement in the local paper trade, notwithstanding that printers are doing comparatively little. The paper business is influenced by many general conditions, and the dullness in one direction is offset by the briskness in another. Some jobbers report that trade is spotty — that it will be excellent for a time and then it will be quite stagnant. It is certain that the days of mere order-taking are gone, business has now to be obtained by going after it hard. In the opinion of one jobber, more of it could be secured if the sales forces generally had a little more imagination, although probably the salesmen would not agree with this view.

The mills report a trifling decrease in the volume of orders, but they are still well employed, export business being in a fair scale. If the reciprocity tariff with Australia goes through, we may hope for a substantial addition to our overseas trade.

The newsprint position is unchanged. The heavy calls on the mills are indicated by the fact that that in May the production of Canadian mills totalled 110,252 tons, the largest amount on record for any month. This compares with 106,361 tons in March, which previously held the record. The general outlook is very satisfactory, and even if the demand falls off a little, the mills will still be pretty busy.

A fair amount of trade is being done in other departments. Books, bonds and ledger orders are moderate, while light weight papers have picked up lately. The board mills have not an appreciable amount of business ahead of them; the American producers continue to compete very keenly for some descriptions, which of course tends to depress prices and to divert a certain number of orders to the other side.

With regard to the pulp market, groundwood is also firm, with a good demand, and with supplies none too plentiful. Sulphite is in fair request. Bleached is being well bought, prices ranging from $90.00 to $100, according to grade. The statistical position of chemical pulp is good, the stocks on hand being very small. These stocks have gradually diminished, and the case of bleached totals about three days' production, while for all descriptions the stocks total about nine days' production.

Toronto Market News

Business in pulp and paper circles continues rather light and neither the mills nor the paper merchants are showing any disposition to pile up stocks which, in most cases, are of small dimensions. Buying is from hand to mouth for the most part, although the paper mills are running fairly full and are disposing of their product quite readily both in the domestic and export markets. Jobbers complain that business with them has not picked up to the extent anticipated at this time and as the usual summer period of light sales is about due it is hardly thought that conditions will improve materially until after the holiday season. The bright spot from a manufacturing standpoint is the newsprint industry which might be said to be booming. Plants are working at practically full capacity and the demand is sufficient to keep surplus stocks down. So great has been the growth of mill capacity in Ontario and Canada as a whole that, while the danger of over-expansion does not appear imminent, there are those who point to such a possibility. It is suggested that as long as prosperous conditions exist in the United States, which is our chief export market, there will be plenty of business for the Canadian mills but should a period of commercial depression develop Canadian mills would be forced to operate much below capacity. Such a contingency, however, is not anticipated in the trade although the cautious ones are pointing it out as a possibility to be guarded against.

PULP. — The demand for pulp has fallen off a bit although there is still some activity in groundwood, the price still being around $36.00. Even in groundwood there has been a diminishing demand. Prices of all lines of pulp remain unchanged and mills appear to be buying nothing beyond their immediate requirements.

PULPWOOD. — Contracts for wood in Northern Ontario are now pretty well closed up by buyers and settlers who are busy cutting, this being the height of the season in these activities. It is stipulated by most purchasers that all wood must be peaeled. Prices remain about the same except as regards poplar which is commanding from $1 to $1.50 per cord more than last year. Ample pulpwood is being offered, except poplar, for which there is a heavy call. While the mills are not buying any more wood than is sufficient to meet their requirements, there is no speculative buying or loading up on the part of concerns who are willing to take a chance on future developments, recalling the rather bitter experience of having huge stocks on hand in 1920 when the slump came, when they had to write off heavy losses on their wood piles.

RAG AND PAPER STOCKS. — According to Toronto rag and paper stock dealers the judgment of the United States Supreme Court declaring the Armstrong Bureau in Chicago an illegal concern is likely to have the effect of advancing the price of waste paper and there may be a coincident drop in the price of board. Just now the price of board is holding firm despite the fact that waste paper has been dropping in price. Should board prices drop there will be a decrease in box board cuttings. Rag stock is moving in fair quantities although there is no great demand. All that the dealers are receiving, however, is being disposed of. The following prices prevail: No. 1 hard white shavings, $4.00 per 100 lbs.; No. 1 soft white shavings, $3.30; heavy books and magazines, $2.30; ledgers and writings, $2.50; No. 1 kraft, $2.50; newspapers, $1.30; No. 1 mixed papers, $1.00; No. 1 misc, 90c; No. 2, misc., 70c.; No. 1 white shirt cuttings, $13.00; fancy shirt cuttings, $6.74; canton flannels, bleached, $10.00; white lawns, $9.00; blue overall cuttings, $6.75; No. 1 manila rope, $6.55; mixed strings, $1.25.

NEW YORK MARKETS

New York, June 16. (Special Correspondence.)— There are concrete signs of increased quietness in numerous parts of the paper industry. The falling away of demand is regarded as nothing more than seasonal, and, when all is said and done, it is commonly admitted by manufacturers and jobbers that current business in paper is of broader dimensions than is ordinarily the case at this time of the year. Dullness is more apparent in the raw material branch of the industry than at the manufacturing end. Most descriptions of papermaking material are in slack demand at present; this applies to wood pulp, rags, waste paper and, in fact, to about every commodity entering into the making of paper and board. Mills are purchasing raw stock carefully, limiting their orders almost entirely to goods actually and immediately required, and yet reports tell of a fairly consistent movement of finished paper of most kinds into consuming channels. It is true transient demand has subsided to a marked degree but contract business is good and a majority of paper manufacturers have enough contracts on file to warrant the operation of their plants at a fair rate of capacity.

The fact that current demand for paper has slowed down is not worrying members of the trade. The situation is viewed as purely a seasonal one, and expressions of confidence are made in various corners of the trade that business will revive in due time. Jobbers are not as busy as they were because transient customers have reduced their buying, if not in the number of orders then in the volume of paper ordered. Demand upon mills consequently is not as heavy, yet instances where manufacturers have curtailed production are more of an exception than the rule, though some have of course let down in their operations while compiling mid-year inventories and making needed repairs to equipment.

The price tone is steady. No changes of note have occurred in quotations and there seems little probability of any material fluctuations even should demand ease off further. Paper prices are today on levels comparing most favorably with the cost of production; manufacturers have done everything possible to keep from advancing quotations and to maintain prices on a stable basis, and a seasonal quieting of the market is not likely to result in disturbing prices from their present healthy position. There may be trifling declines during the summer months, depending on the market condition prevailing for the different kinds of paper, but prospects are for no broad changes in price levels for sometime to come.

The newsprint market continues firm. There has been no slackening of demand for this description of paper; if anything, publishers are just as anxious for supplies as hitherto and mills are running at a rapid clip and are provided with a ready outlet for about all of the paper produced. Prices are strong, and spot lots of print paper are frequently commanding premiums in the open market since a majority of mills have their full output sold on contract and therefore have but little supply to direct to transient buyers.

A feature of the market has been a spurt of demand for tissue paper. Buyers have been actively in evidence for both white and manila tissue, and some good-sized orders have been placed during the past few days. Prices rule steady at around 90 cents a ream for No. 1 white tissue, 20 x 30 basis, and at about 80 cents for No. 2 white and No. 1 manila, 24 x 36 basis, f.o.b. New York.

Coarse papers are in less call but manufacturers as a rule are well fixed with contracts and are shipping out their product freely. No. 1 domestic kraft is quoted at about 7 cents a pound f.o.b. New York, with the No. 2 grade quoted at 6 cents on an average. A hearing was held in Washington this week on the claim that Norwegian manufacturers were dumping kraft wrapping paper imports.

Fine papers are in a quieter market position. Demand is for smaller quantities and it is reported that some mills in New England have reduced their production of at least certain lines of bonds, ledgers and writings. However, prices hold firm and there is no sign of any impending changes.

Board prices moved down another peg this week. Early in the week Eastern mills were quoting $60 a ton f.o.b. New York on news board and $57.50 on plain chip, but toward the middle of the week several manufacturers cut prices to $57.50 on news and $55 on chip. In certain instances the same quotation was named on news board as on chip. Generally speaking, demand for board is fair. Paper box manufacturers are buying cautiously, ordering only against direct requirements, yet mills in this part of the country are running five days a week and seem to be marketing their product without a whole lot of difficulty. The decline in prices appeared to be largely a matter of sharp recessions in raw material costs, thus enabling board manufacturers to produce board at cheaper prices.

GROUND WOOD.— Some reports have told of a little better demand for mechanical pulp, and, judging from all the advices in hand, there is a moderately large movement of supplies toward consumers. However, it is plainly apparent that buyers are proceding in a cautious manner, generally confining their purchases to pulp immediately needed, and many of them having their present wants so well covered that they are enabled to keep out of the market for days at a time. Ground wood quotations appear to have steadied at around the $35 a ton level f.o.b. grinding plants for prime spruce pulp for prompt shipment. Perhaps some supply is being secured at slightly under this price but the probabilities are that the great bulk of ground wood being sold currently is fetching this price or a trifle better. Grinding operations are on a fairly large scale and this results in bigger amounts of pulp being available, though producers are said to be storing any surplus they have to tide them over the dry season which usually develops in the late summer.

CHEMICAL PULP.— The buyers' strike in chemical wood pulp continues. There is a lack of important demand in evidence except against pressing requirements, and paper mills in various parts of the country are absorbing pulp in a way that makes for a quiet market tone. The same tendency to hold aloof from purchases which has been noted for some time exists, and transactions involving sizeable amounts of pulp are few and far between. The price condition might be correctly described as "nervous." Importers view matters with much confidence and insist that prices will hold firm throughout the summer, owing to strong markets at primary sources abroad, yet instances are cropping up from day to day where papermakers have succeeded in buying pulp at slight concessions, indicating that sellers are anxious enough for business to concede something in the way of price.

Unbleached sulphite and kraft pulp appear to be relatively steadier than other grade. Prime unbleached sulphite of foreign origin is quoted at around 3.40 cents per pound ex dock New York, and Scandinavian kraft at 3.35 cents on the dock, with only occasional sales reported at below these levels. On the other hand, bleached sulphite seems to be weakening. Domestic producers continue to quote 5 cents for prime bleached at pulp mills, and imported bleached sulphite is quoted at 4.50 to 4.75 cents for the No. 1 grade and at about 4.25 cents for No. 2 quality. However, sales at cheaper figures are reported from time to time. Bleached soda pulp is quotably steady at about 4.25 cents per pound f.o.b. pulp mills and most domestic manufacturers are said to be well sold up on this pulp.

RAGS.— The papermaking rag market is characterized by considerable easiness. Demand for all grades is slow and the movement of prices is downward, and there is no indication that the bottom levels have yet been reached in spite of the fact that some sharp declines have occurred in the past few weeks. New cuttings are wanted in very small lots. Writing paper mills are buying in strict hand-to-mouth fashion and seen to be getting the rags desired at virtually their own prices; old whites and blues are largely neglected and are tending off in value, while roofing rags have scored further declines in a market exhibiting practically no life whatsoever. Sales have been reported of No. 2 roofing stock at close to a cent per pound f.o.b. New York, and No. 1 packing is bringing only around 1.25 cents at dealers' shipping points. New No 1 white shirt cuttings are offered at 12.50 cents a pound New York without attracting many buyers, and washables are available to mills at 4.75 cents per pound, new unbleached muslins at 11.25 cents, new light silesias at 8 cents, and fancy shirt cuttings at 6 cents. Thirds and blues have eased off to about 2.75 cents a pound for choice repacked stock at shipping points, and 2 cents for miscellaneous packing.

PAPER STOCK.— Down and down go prices of waste paper. Further declines, in some cases of rather broad dimensions, have been noted this week, and prices have worked off to levels where dealers claim collections are being halted owing to the lack of profit in gathering old paper at prevailing market values. No. 1 mixed paper has sold at 70 cents a hundred pounds f.o.b. New York, city mixed at 50 cents, and old folded newspapers at 80 cents; in fact, there have been reports of sales at even lower prices. Flat stock is quoted by New York dealers at 1.65 cents a pound for heavy No. 1 magazines, and 1.40 cents for mixed books, while ledger stock is selling at around 1.85 cents per pound or less New York. Shavings also have declined. No. 1 soft white shavings have been bought by consumers at 3.15 cents a pound f.o.b. New York, and No. 1 hard white at 4 cents. Old kraft paper is one of the steadiest items in the market, and is bringing close to 2 cents a pound at dealers' shipping points.

OLD ROPE AND BAGGING.— There is not much demand from paper mills for old rope and prices display a sagging trend. Around 6 cents a pound at shipping points is the basis asked by dealers for No. 1 domestic manila rope, but sales undoubtedly have been made at cheaper figures, while foreign old rope is worth less than the domestic article. Old bagging is dull and quotably easy. No. 1 scrap burlap is freely available at 1.15 to 1.25 cents a pound at dealers' points, and bagging has sold to roofing paper mills at 70 cents a hundred pounds f.o.b. New York.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

TRADE MARK

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52 Vanderbilt Avenue
NEW YORK, N. Y.

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

WISE MEN AND THEIR MONEY

By R. W. McNeel

In (The Paper Dealer)

As service is at the foundation of all money-making, so thrift is at the foundation of all investment. Down through the ages perhaps more essays have been written, more lectures delivered, more wise saws propounded, on the necessity for and benefits to be derived from thrift than on any other one subject.

The thrifts campaigns of today, carried on by such institutions as the insurance companies and the savings banks, generally appeal to the fears or the cupidity of men. In appealing to fears they portray the financial condition of the average man at various stages of his career as revealed by statistics.

Behind all the thrift sermons and campaigns is this economic and financial philosophy and fact—no one can become wealthy by labor alone. Fortunes are created by the labor of brain and hand only when supplemented by the productive powers of capital. The only way capital is created is by individuals creating more wealth than they consume. The money a man receives for his labor represents the reward organized society gives him for its services and is just so many tickets entitling him to draw on the world's supply of goods for the equivalent of what he has produced. If he spends all his money it merely means that he is drawing on the world for all it owes him. He is consuming all he creates. It is only in so far as he spends less than he earns or consumes less than he creates that he can acquire capital to supplement his creative power of labor. That is thrift. There is no other way to get capital unless it is inherited or stolen.

Failure to distinguish between various kinds of efforts is more frequently the cause of loss of money than any other. If one could canvass the people who put their funds into the thousand and one fake or financially unsound schemes by which they were relieved of their money in the last year he would find that most of them thought they were investing.

Some seem to think whenever they give up their money in return for any stock certificate or any bond, they are making an investment. They say, "I have invested my money in X. Y. Z. oil," or "I have invested my money in P. D. Q. Radio," whereas the so-called securities they have received in return for their money do not contain a single element a real investment must have. Others seem to think if they pay for stocks or bonds outright they are investing, whereas if they purchase them on margin, that is largely with borrowed money, they are speculating.

Thousands of people have been stampeded into putting their funds into various radio promotions in the last few years, in the hope of duplicating the financial success of those who gambled in American Bell Telephone industry. Most of them think they are investing.

One must adopt some definite standards of measurement to determine whether he is investing his money, is speculating with it, or is gambling.

SAFETY FIRST!

Never depend on the other fellow to prevent an accident. His vision may be obstructed, or something may happen to distract his attention and you may be injured.

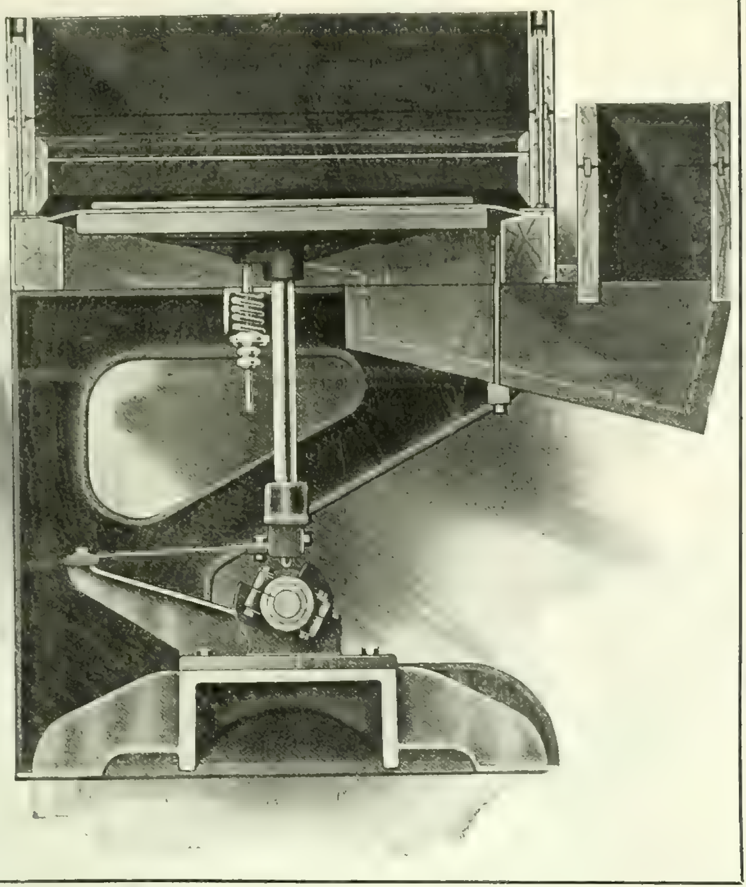
Do more than your share to avoid accidents to yourself and others.

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS



THE
"HYMAC"
LINE

THE ILLUSTRATION SHOWS SECTIONAL END VIEW OF OPEN TYPE END LEG, ALSO LOCATION OF TENSION SPRING, WHICH GIVES COMPRESSION TO WORKING PARTS AT ALL TIMES.

DIAPHRAGM SCREENS

FLAT OR INCLINED TYPE

THE ONLY SYSTEM PRODUCING CLEAN CHEMICAL PULP FOR HIGH GRADE PAPER.

All joints machined, lightest construction, but strongest working parts, practically no tension on springs, friction eliminated, irregular shape of cams, giving a quick upward blast which frees the screen plate slots, and a slow downward suck taking through the maximum amount of stock, thereby increasing the capacity at twenty-five per cent. slower speed

THE INCLINED TYPE	THE FLAT TYPE
SAVES LABOR	LOWER POWER
SAVES PLATES	SLOW RUNNING
SAVES PUMPING	SIMPLE
SHOWER WATER	INCREASED CAPACITY
INCREASED CAPACITY	CLEAN STOCK
CLEANER STOCK	

SCREEN BULLETIN "T"

THE HYDRAULIC MACHINERY CO., LIMITED

MONTREAL CANADA

WESTERN OFFICE
LONDON BUILDING, VANCOUVER, BRITISH COLUMBIA
JAMIESON ENGINEERING CO., IN CHARGE

What Did You Do with That Match?

The suffering and loss caused by forest fires are common knowledge and, yet, carelessness with fire in the forest continues. These forest fires are practically all preventable.

Save Ontario's Forests

They're Yours

Every individual who steps inside the woods should remember he is in the midst of highly inflammable property, for the upper layer of ground in the forest consists of partially rotted wood, which will burn. Lack of consideration for this gave rise to the strenuous situation in Ontario the last week of May and the anxiety for days in some settlements.

Thoughtlessness or bad judgment or carelessness cause practically all forest fires. Your co-operation, as a citizen, is needed to prevent these fires by taking the same care in the woods as in your own home.

Prevent
Forest
Fires

Ontario Forestry Branch
Parliament Buildings
Toronto, Ont.

"Paulson" Preference---

MONTMORENCY LUMBER COMPANY

EDWARD C. GORMAN
AGENT

MONTMORENCY FALLS P. Q. April 4th, 1922.

Canadian Ingersoll-Rand Co., Ltd.,
260 St. James Street.
MONTREAL.

Attention: Mr. Carter.

Dear Sir:-

Your favor of 31st, ultimo to hand.

Your 46 x 14 Paulson Drum installed at our plant in 1921, has run one season, during which we put through 30,000 Cords of Rough Wood or about 26,000 Cords of Finished Wood

This work was performed at the rate of 24 to 25 Cords of Finished Wood hourly, and in a satisfactory manner, the ends are not broomed, the bark is all removed, leaving the wood clean

We had no trouble in operating the drum, and during the run had no shut downs, break downs or stoppages of any kind

Yours very truly,
MONTMORENCY LUMBER CO.,
by
Agent.

It is a rather significant fact that Paulson Barking Drums have been specified as a necessary essential of the wood preparing plants of practically all of the largest mills built in Canada, the United States and Newfoundland, during the past three years.

This equipment is there because it has proven its worth. Materials, workmanship and design are modern — the product of builders who, knowing the importance of this equipment and the severe duty under which it must operate, build accordingly.

Bulletins, list of users and actual performance records sent on request.

Canadian Ingersoll-Rand Co., Limited

Sydney Sherbrooke Montreal Toronto Cobalt
Winnipeg Nelson Vancouver

Paulson Barking Drums

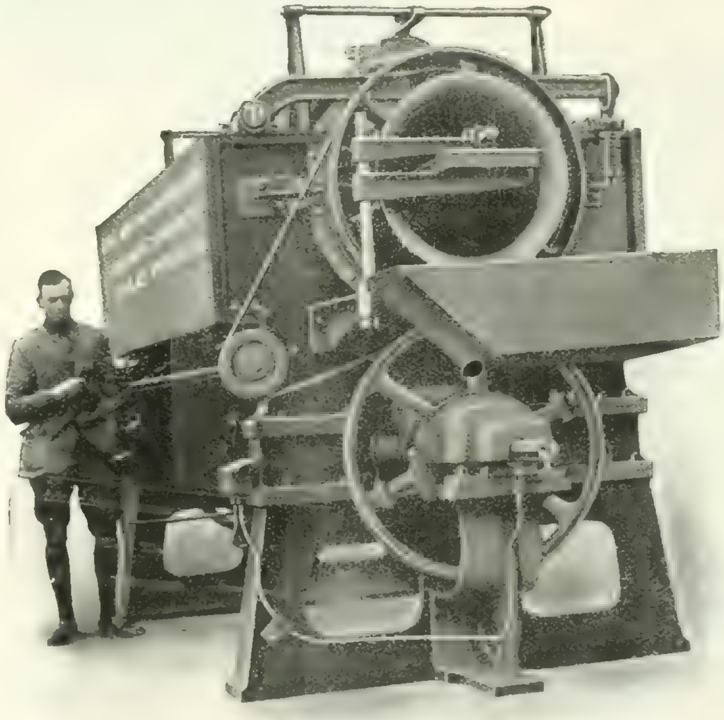
The Watford Engineering Works,
Limited.

Established 1827 by Mr. GEO. TIDCOMBE, Senr.

PAPER MILL ENGINEERS & MILLWRIGHTS

LOWER HIGH STREET, WATFORD, ENGLAND.
Telegrams: "Mechanical Watford." Code — 5th Edition A B C Telephone: 35 Watford.

WILLIAM WHYTE, 39 DRAPER AVENUE
MONTREAL, QUE.



LICENSES FOR

SOUTH FRANCE, GERMANY, ITALY, JAPAN, NORWAY, SWEDEN, SPAIN and SWITZERLAND: Messrs. Escher Wyss & Co., Zurich, Switzerland.

HOLLAND and BELGIUM: Mons. Edward Chantrenne, Nivelles, Belgium.

NORTH of FRANCE: Messrs. Lhomme & Argy, 9 Rue Lagrange, Paris.

U. S. A.: The Bagley & Sewell Co., Watertown, New York.

CANADA & NEWFOUNDLAND: Messrs. Chas. Walmsley & Co. (Canada), Ltd., Longueuil Works, Montreal.

The "Tremor" Screen
FOR PAPER MACHINES
(Either Inward or Outward Flow; Fully Protected)
Fitted with large drums suitable for Canadian and American practice
(A PURELY ROTARY SCREEN WITH NO RECIPROCATING PARTS)
Perfectly Silent Positive Rotating Drum and Minimum Upkeep
EXISTING SCREENS FITTED WITH THE "TREMOR" PATENTS

PULPERS, SCREEN PLATES, DRUMS AND CYLINDER MOULDS OF EVERY DESCRIPTION

SPRAY DAMPERS, SLITTERS, FROTH KILLERS, STUFF CHEST MIXERS, PULP SCREENS. Etc.

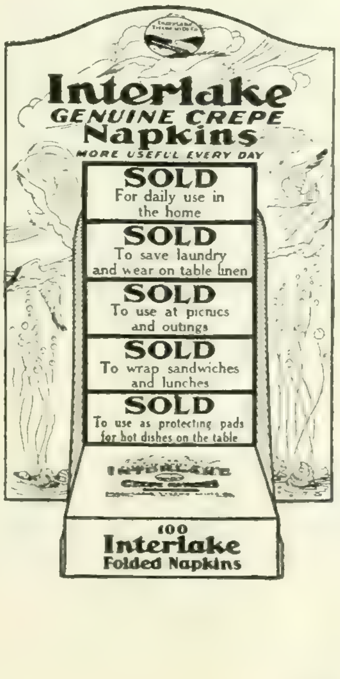
A New Product and a New PROFIT

New products bring new profits to dealers handling them. A new product recently added to the *"Interlake"* line, and one which offers a good profit to dealers is the

Interlake Bleached White Crepe

NAPKINS

Many new uses have been discovered for this product, which promise to greatly increase sales. The napkins are 14"x14" in size, folded, and conveniently boxed in cartons of 100 each.


Interlake
GENUINE CREPE
Napkins
MORE USEFUL EVERY DAY
SOLD For daily use in the home
SOLD To save laundry and wear on table linen
SOLD To use at picnics and outings
SOLD To wrap sandwiches and lunches
SOLD To use as protecting pads for hot dishes on the table
100
Interlake
Folded Napkins

FREE Counter Display

To dealers ordering a case of 48 cartons, we will send free of charge, one of the attractive counter display stands illustrated herewith. It is made to hold six cartons. Send for yours to-day.

Interlake Tissue Mills Co.
Limited
Head Office
54 University Ave., Toronto, Canada
Sales Branch
McGill Building, Montreal, Canada

Have You Heard of

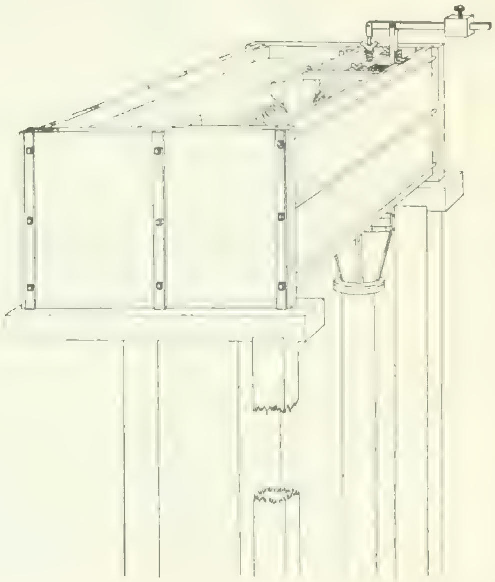
The Boivin Regulator

Used on all Paper Machines of

The Abitibi Power & Paper Co.

IROQUOIS FALLS, ONT.

SCIENTIFIC
IN
PRINCIPLE



PRACTICAL
IN
DESIGN

RUGGED
IN
CONSTRUCTION

DELICATE
IN
OPERATION

NO WEARING PARTS
NO POWER
NO ATTENTION
NO MAINTAINANCE

and

HOLDS
THE BASIS WEIGHT
UNIFORM

FOR PARTICULARS WRITE TO

LOUIS BOIVIN

IROQUOIS FALLS, ONT.

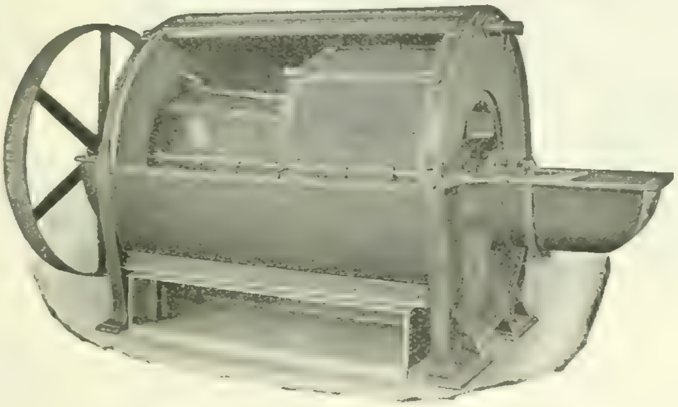
"IMPCO" MACHINERY

MODERN CLOSED SYSTEM

No Pulp Lost Except Rejection at Bull Screen

Knotter, Knot Screen or Sliver Screen

FIRST SCREENING

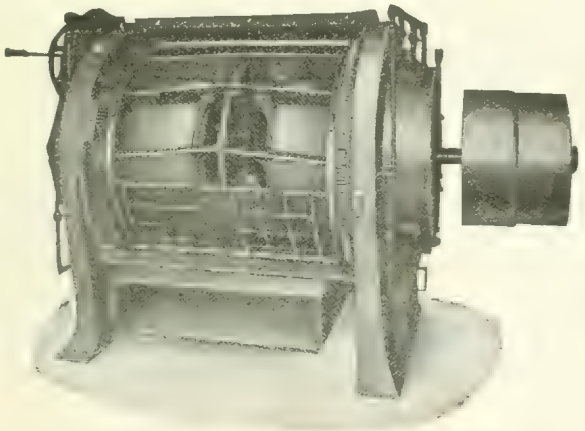


"IMPCO" KNOTTER

For sulphite, sulphate, soda, kraft or ground wood. Capacity up to 50 tons less than 1 H.P. per machine, single belt drive, no gears or sprockets, no packings, slow speed, quick detachable plates. The standard machine for removing knots, shives and foreign matter.

Centrifugal Screen

FINE SCREENING



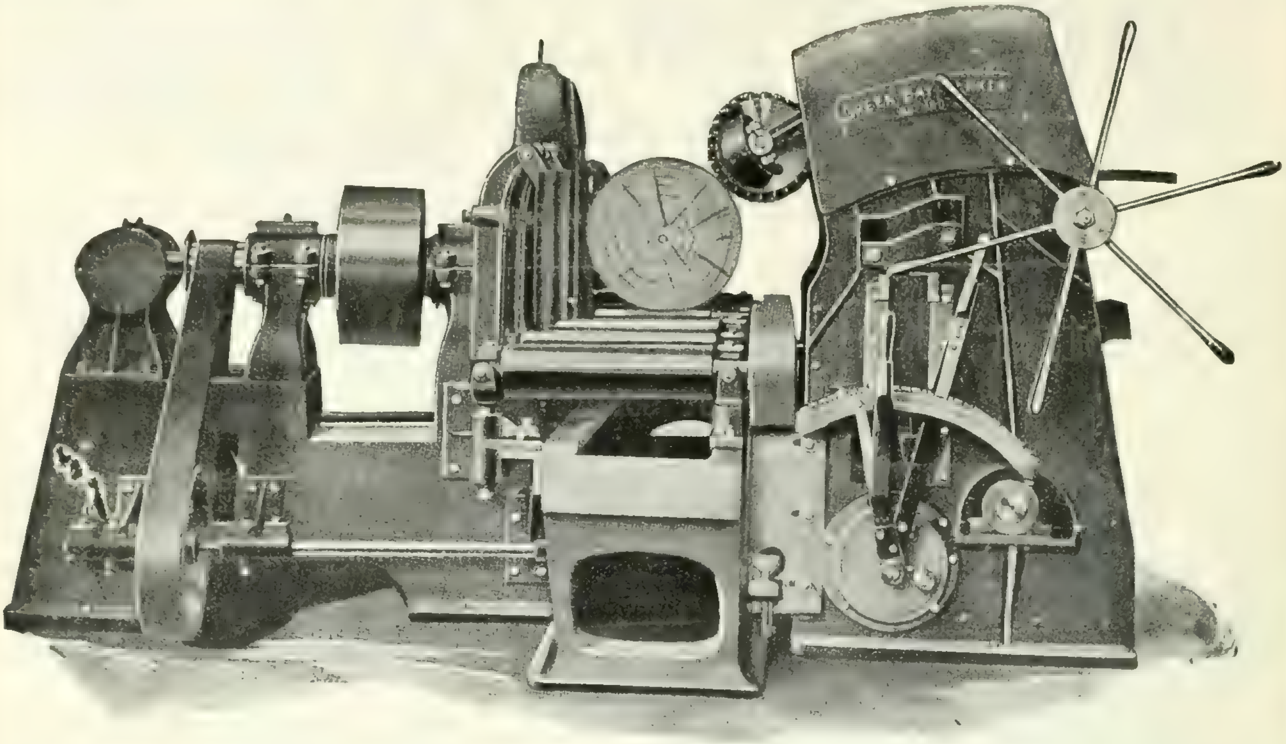
"IMPCO" SCREEN

For fine screening of sulphite, sulphate, soda, kraft or groundwood pulp. Highest quality of stock produced at minimum power: Revolving screen plates; mechanically correct.

INVESTIGATION SOLICITED

SHERBROOKE MACHINERY CO., Ltd.

SHERBROOKE - QUEBEC



Equip your Mills with Green Bay Barkers--Materland Labor Saving Machines

BARKERS that have stood the test of time—both normal and abnormal. **Higher** prices will be obtained in normal times for paper manufactured from wood barked on rotary knife barkers. **Equip your mill to take care of normal business conditions.**

OVER 300 MACHINES in use in Scandinavian countries — Unquestionable evidence of the superiority of Green Bay Barkers, over any other methods known.

CANADIAN BARKER CO.

SAULT STE. MARIE, ONTARIO

Established 1870

AYERS LIMITED

LACHUTE MILLS, P. Q.

Pioneers and leading the field, in Canada, in the manufacture of

PULP and PAPER MAKER'S FELTS

Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

The Attainment of an Ideal

"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" **FELT WASHER** attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U. S. A., CANADA AND EUROPEAN COUNTRIES
PATENTS APPLIED FOR IN JAPAN AND MEXICO

Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

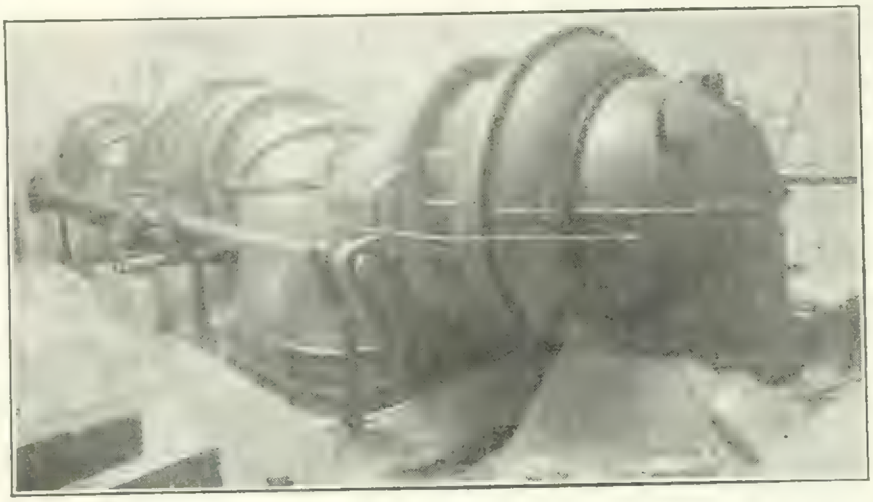
Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT "WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

HYDRAULIC TURBINES of CANADIAN DESIGN AND MANUFACTURE



Modern Designs
Highest Efficiency
Substantial Construction
Continuous Service

We pay special attention to those little details which reduce the cost of maintainance and repairs to a minimum.

Our Hydraulic Turbines ensure a sound investment.

Boving Hydraulic & Engineering Company, Limited
LINDSAY, ONTARIO

STEAM

High Cost Wastage

We can positively show you

How you can conserve and cut steam costs that will startle you.

We apply common sense methods to Boiler Rooms and Steam Plants of all kinds.

Let us show you how it can be done.

Our Systems are unique.

Canadian Combustion Company Limited
St. James Chambers, Church, Adelaide Sts. TORONTO
ENGINEERS *MANUFACTURERS*

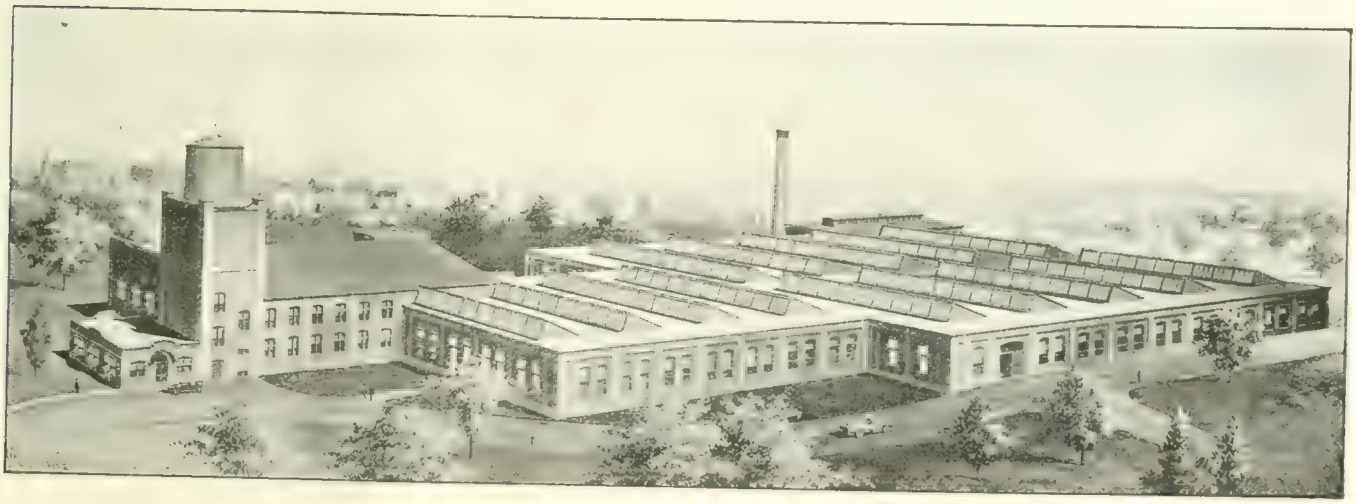
The production cost figures in many mills show that it is less expensive to remove water through felts than at the dryers. Actual working tests are daily demonstrating superior filtering qualities in---

KENWOOD

Felts and Jackets

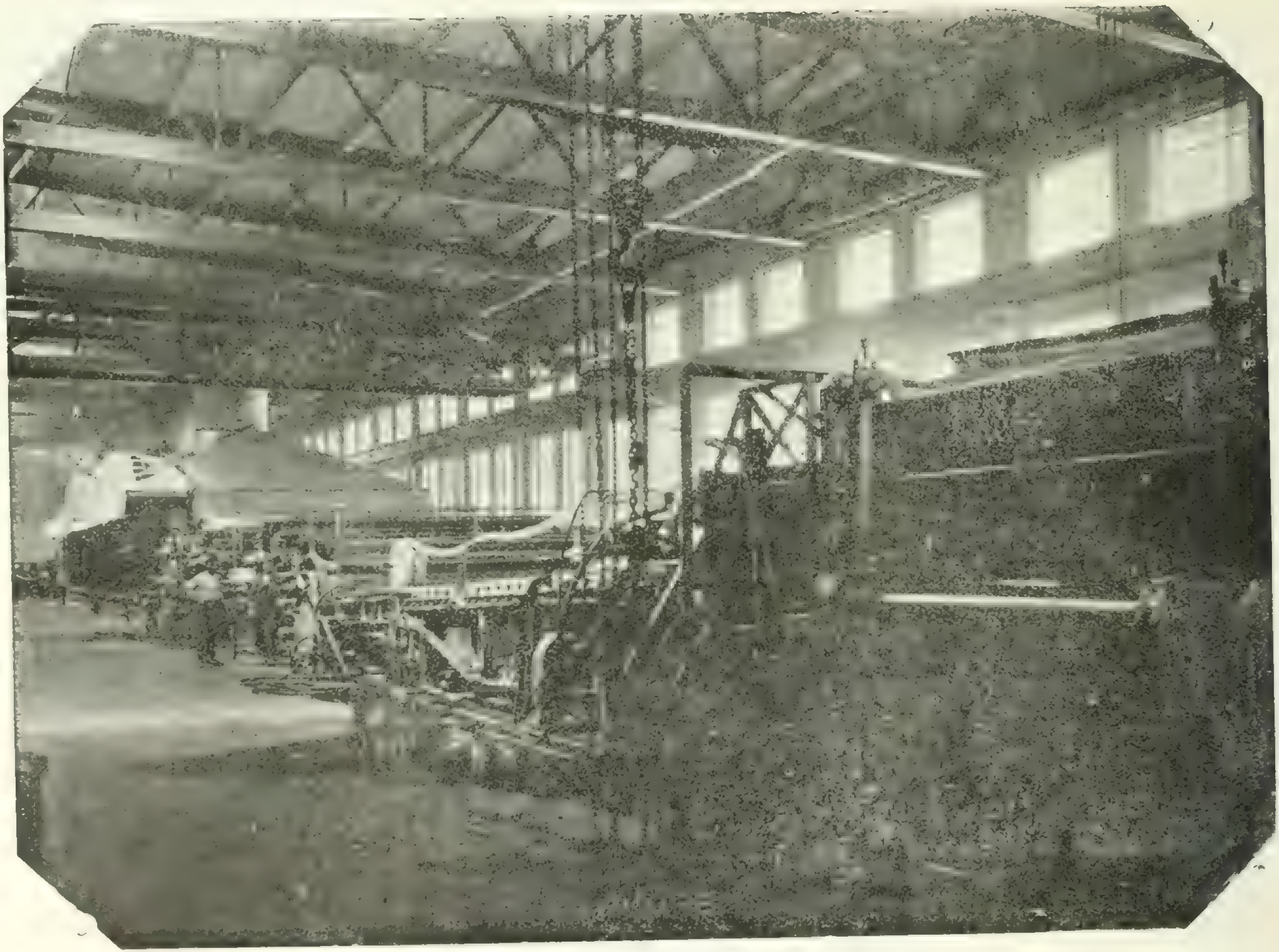
KENWOOD MILLS LTD.,

Arnprior, Ontario



Charles Walm

Telephone — 499 BURY.
Telegrams — "PUMPS BURY."



Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.
Which has given an output as large as 90 tons in 24 hours.

HIGH SPEED

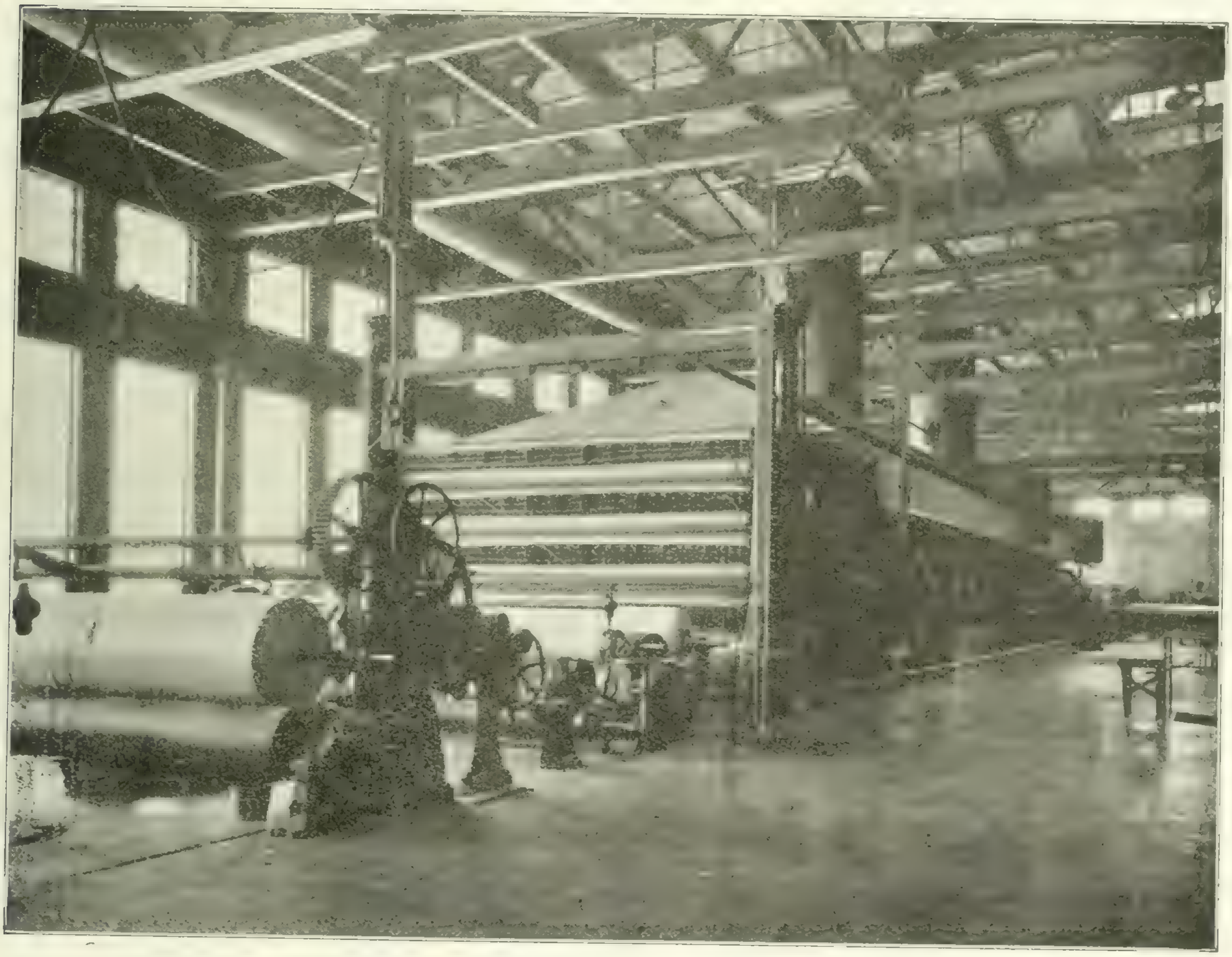
Western Canadian
Western U. S. A. } Representative
JAMIESON ENGINEERING CO.
London Building, Vancouver, B.C.

Paper Makers

ATLAS WORKS,

sley & Co. Ltd.

Cables — PUMPS BURY, ENGLAND
Codes — 5th Edition, A B.C. Western Union.



Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

PAPER MACHINES

Engineers

Eastern Canadian } Representative
Eastern American }
WILLIAM WHYTE,
39 Draper Ave., Montreal, Que.

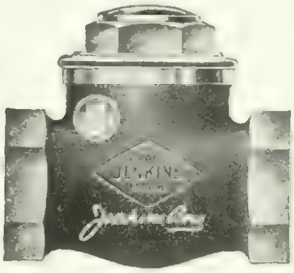
BURY, LANCASHIRE.

Jenkins

Bronze

Swing Check Valve

Equipped with Jenkins Renewable Composition Disc



Adapted for use in horizontal or vertical position

A strong, handsome and durable valve.

The Disc lifts well out of the passage and offers no more resistance to the flow than the best gate valve.

Fig. 475, shown here, is the screwed standard pattern for 150 pounds working pressure. Valve can be furnished with flanged ends if desired — Fig. 476.

These Valves have the *renewable* disc feature and like all genuine Jenkins Valves have the Diamond Trade Mark on the Body.

Catalog No. 9 tells about these valves in detail, Write for free copy.

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FACTORIES
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Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

All the Uniform Rosin You Need

If you were assured of an unfailing supply of rosin free from all foreign matter and uniform in color and quality, you would certainly consider it worth taking advantage of. The Hercules Powder Co. is prepared to offer you rosin under just such conditions.

Hercules Wood Rosin is produced under strict physical and chemical control. We can assure you of a dependable supply, which will not vary in the slightest from one shipment to another.

More than that, we offer you the co-operation of a large and well equipped chemical organization with an interest in Hercules Products that does not stop when a sale is made. It may be that our technical staff, working with yours may save you money in more ways than one.

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Wilmington Delaware

SALES OFFICES:
New York, N.Y. St. Louis, Mo.
Chicago, Ill. Louisville, Ky.
San Francisco, Calif. Buffalo, N.Y.
Chattanooga, Tenn. Duluth, Minn.
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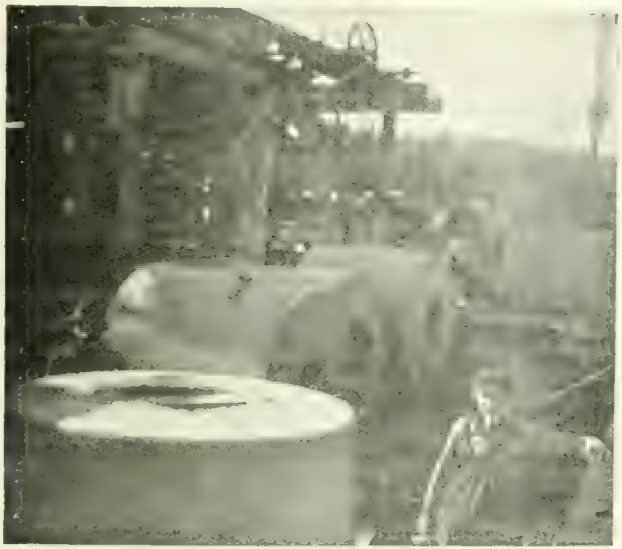
HERCULES Naval Stores

Produced Under Chemical Control

Canadian Pulpstones all sizes including

MAGAZINE GRINDER STONES



Part of a recent shipment of Magazine Grinder Stones

Keep Canadian money in Canada. Promote development of resources and increase national prosperity, by using HOME PRODUCTS.

DIRECT FROM MAKER TO USER

The Miramichi Quarry Co., Limited

QUARRYVILLE, N. B. Canada

LEAD PIPE

Any size up to 12 inch

SHEET LEAD

Any length, Any width up to 8 feet

Immediate Delivery - - Antimonial or Pure

"HARRIS" HEAVY PRESSURE

The Babbitt Metal for all round General Service

Has stood the Test for the past 40 years.

The Canada Metal Co., Limited

Hamilton
Montreal

TORONTO

Vancouver
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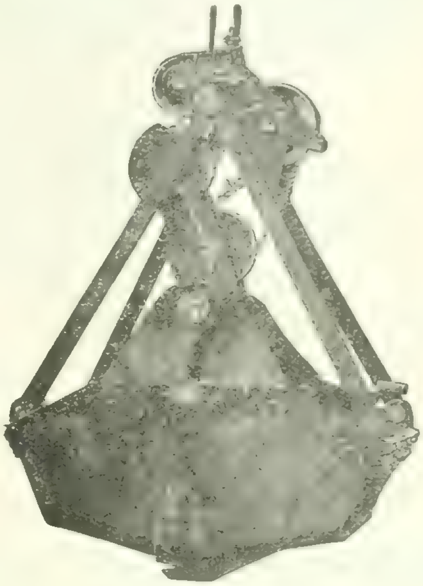
"MEAD-MORRISON"

GRAB BUCKETS



TYPE H BUCKET

GRABS OF ALL SIZES FOR ALL PURPOSES ALWAYS KEPT IN STOCK.

HOISTING ENGINES

DERRICK IRONS

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B. C. Equipment Co., Limited,	Vancouver
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Made in Canada by

CANADIAN MEAD-MORRISON CO
LIMITED
CANADA CEMENT BUILDING
MONTREAL
WORKS WELLAND ONT.

St. Maurice Lumber Co.,
Pulp and Paper Mills,
Three Rivers, Quebec
Heated by
The Dunham Vacuum System

Some of the Dunham Heating and Industrial Specialties
Packless Radiator Valves
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This is one of the latest and finest equipped plants in Canada. Newsprint will be produced from four of the most modern types of electrically driven machines capable of an operating speed of 1200 feet per minute. Boilers are equipped with oil burners and the entire plant is replete with the latest efficiency making devices.

It is therefore a source of pride to us that Dunham Heating was selected as the most adequate system for this establishment. The Dunham Vacuum System heats the complete plant using steam at remarkably low pressure to circulate long distances to other buildings which do not show in the picture.

C. A. DUNHAM CO., Ltd., Toronto. Ont.
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The DUNHAM
REG. TRADE-MARK
HEATING SERVICE
(Made in Canada)

McARTHUR, IRWIN, LIMITED
MONTREAL ESTABLISHED 1842 TORONTO

Sole importers for the dyestuffs and intermediates Manufactured by:

Actien Gesellschaft Fur Anilin-Fabrikation, Berlin.

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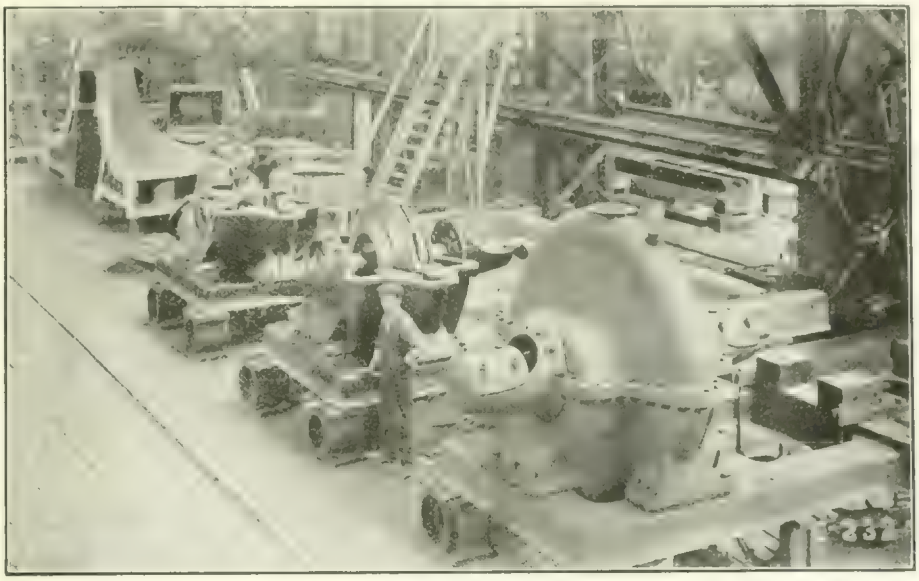
Chemische Fabriken vorm Weiler Ter-Meer, Uerdingen.

Stocks carried at Montreal

Paper Colors a specialty

Special I. P. Morris Centrifugal Pumps.



Electrically Driven, for Water Supply Service.

- *Fast-Running Newsprint Machines,*
- *Fourdrinier Machines for Fine Papers,*
- *Cylinder Machines for Board,*
- *Plunger type Stock Pumps,*
- *Fan and Centrifugal Pumps for General Mill Service,*
- *Screens, flat or rotary types,*
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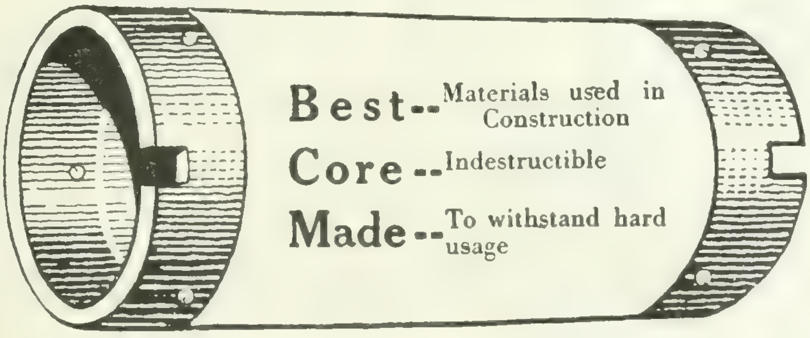
YOU CAN NOW SECURE THE ELIXMAN CORES

(with or without the patented steel caps)
at Hamilton, Ontario


Best--Materials used in Construction
Core--Indestructible
Made--To withstand hard usage

Trial lot upon request — without cost to you

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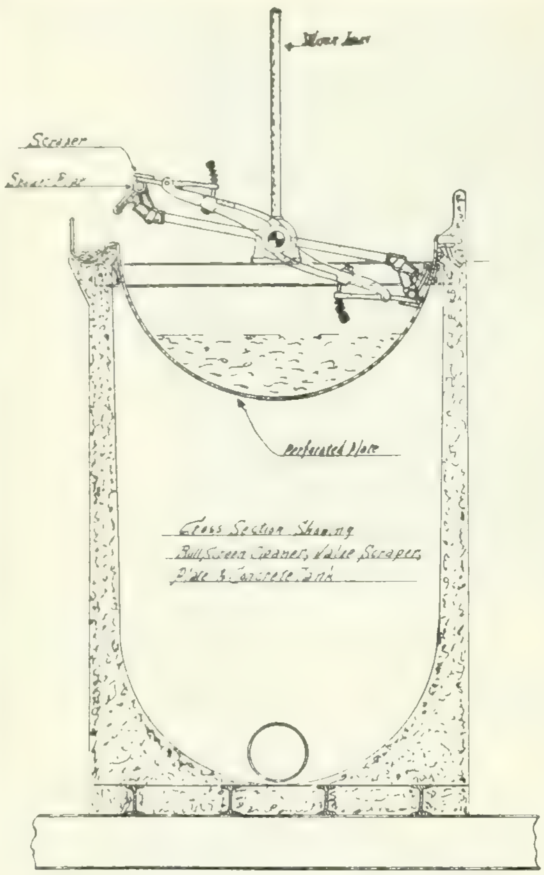
King & Sydney Streets,
Hamilton, Ontario, Canada.

Elixman Paper Core Co., Inc.
Maple & Center Streets,
Corinth, N. Y., U. S. A.



The Marvel Bull Screen & Cleaner

PERFECT RECOVERY | **NO MORE WASTE**

Space reduced by 2/3
Power reduced by 2/3
Production increased by 2%
Labor Entirely Suppressed

Ideal Patents Corporation
GRAND'MERE, Que., Canada

NO LOSS OF TIME | **SCREENS any RAW MATERIAL**

Certificate of Contentment
From
Laurentide Company, Limited
of GRAND'MERE, Que.

I am glad to take this opportunity of advising that the automatic shower, above, referred to, has been working satisfactorily for about two years and that it has increased the capacity of our sliver screen by at least 20% (Signed) J. O. MASON,
Operating Manager.

Address all inquiries and orders to
Canadian Vickers, Limited
Montreal, Que., Canada

Penmans

FELTS

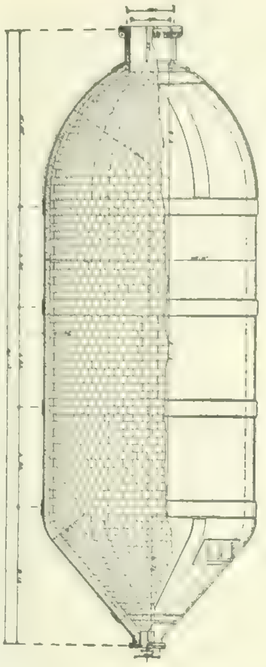
and JACKETS
For Pulp and Paper Mills

Penmans
LIMITED

ST. HYACINTHE, QUEBEC

"Made in Canada"

MILLS AND SALE OFFICE, ST. HYACINTHE, QUEBEC



ACID-PROOF LINING

BRICK AND TILE

Let Stebbins Products Cut Your
Overhead Costs

Wherever acids are used, there is a field for acid-proof brick or tile, as a lining for digesters, tanks towers, leaching cells, incinerators, combustion chamber, alcohol and chemical recovery equipment. Leaking acid is not only dangerous to employees, but it can cause serious damage to valuable equipment. Such leaks, moreover, cause production delays and repair charges you cannot afford today.

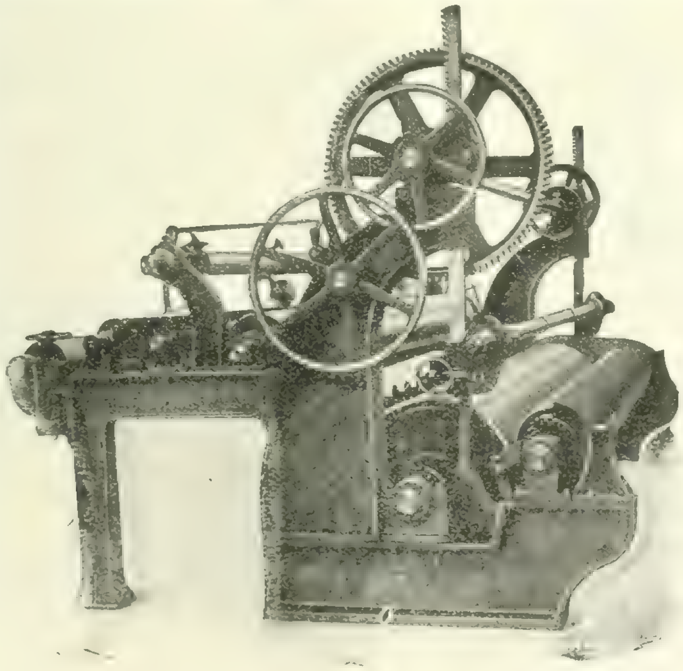
Stebbins Acid-Proof Brick and Tile are made with over thirty years' experience in such work behind it. They are hand kneaded and moulded, strong, and free from blow holes and kiln cracks. They are proving their worth by highly satisfactory service in pulp digesters in paper mills in this and foreign countries a use calculated to demonstrate the weaknesses of any brick.

Whether your product is acid, paper, alcohol or other chemicals, Stebbins service can save you money. We'll be glad to show you how in detail. Write us now! And let us quote you on your acid-proof linings and other equipment delivered and installed.

STEBBINS ENGINEERING & MANUFACTURING COMPANY

Designers Equippers Operators
Sulphate Soda Sulphite Pulp Mills

Watertown New York U.S.A



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WARREN

PATENT

DOUBLE DRUM

WINDER

With Slitter Attachment

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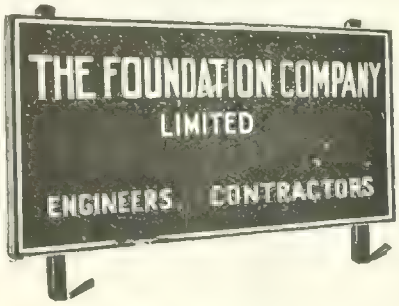
TICONDEROGA MACHINE WORKS
TICONDEROGA, - N.Y. U. S. A.

CONSULTING ENGINEERS



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MONTREAL

HERBERT S. KIMBALL, Mem. Am. Soc. C. E.
CONSULTING CHEMICAL ENGINEER
Specialist in SODA PULP MILL DESIGN
and
Chemical Equipment for Pulp and Paper Mills
177 STATE STREET, BOSTON, MASS.

PAPER MILL ARCHITECT AND ENGINEER
JAMES L. CAREY
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Codes: ABC 5th Edition and Western Union
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Large stock new and used A.C. & motors
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Safe and Reliable
Reports TIMBER ESTIMATES Maps
JAMES W. SEWALL
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MACKINNON STEEL CO., LIMITED
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Designers, Manufacturers and Erectors of
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BUILDINGS, BRIDGES, TANKS
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Specialist in
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WE MANUFACTURE
WOOD TANKS
of Every Description
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MONTREAL, QUE.
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STEAM POWER PLANTS.
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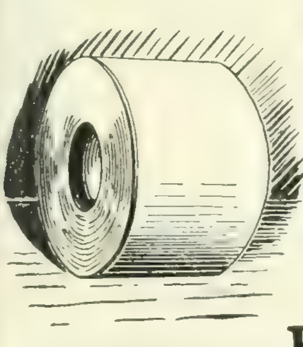

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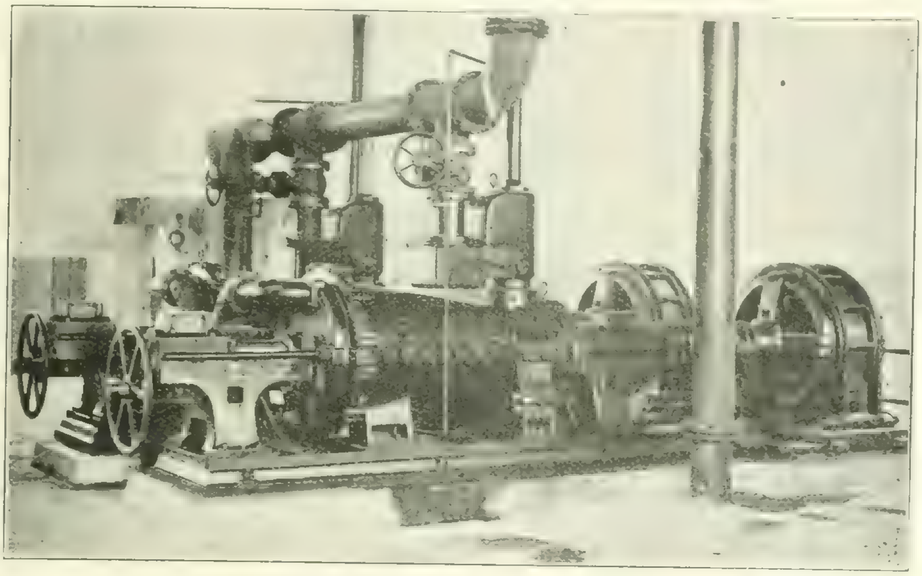

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. GARDENVALE, QUE., June 28, 1923 No. 25

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J. NEWELL STEPHENSON, M.S., Editor

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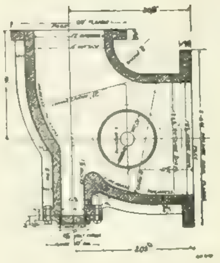

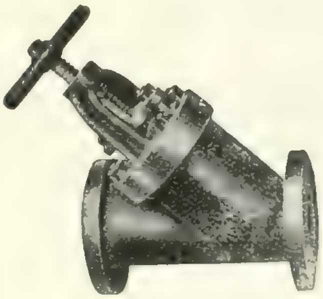

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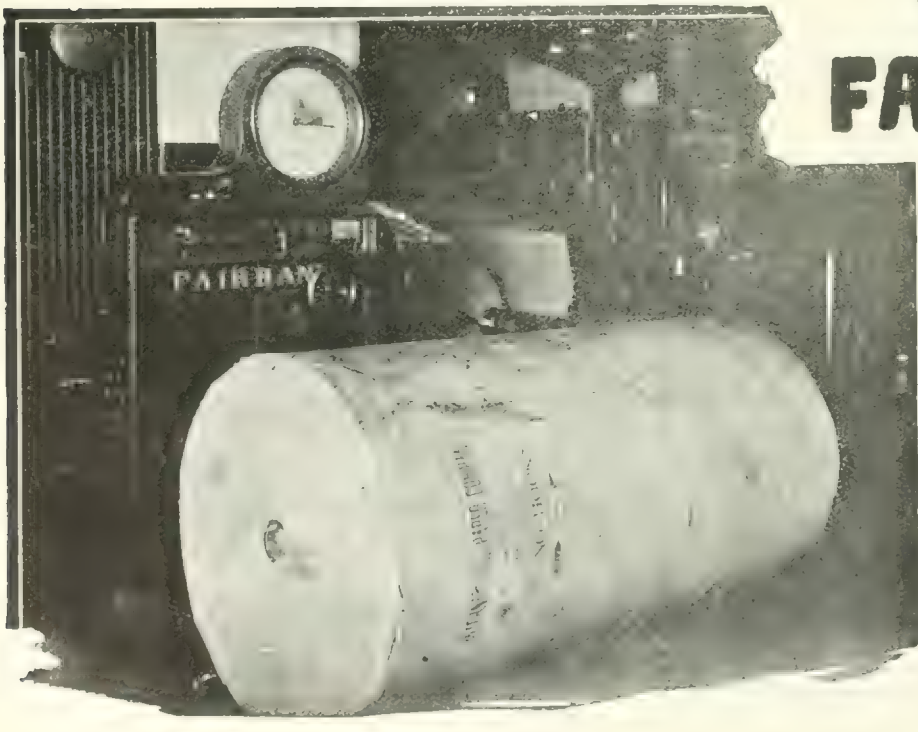

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:-: EDITORIAL :-:

CANADA'S BIRTHDAY

Next Sunday will be Canada's Birthday. The Dominion is fifty-six years old, and has come to occupy a position of deserved prominence in the British family of nations. Fifty-six years in the life of a man or woman would be an indication of approaching old age, but in the life of a nation it is but a period of youth and adolescence. During the fifty-six years that have elapsed since Confederation, the Dominion has grown strong and has developed natural resources to a point where this country is now in a position to serve the other members of the Empire, and other countries as well, with both raw materials and manufactured products in great variety and in large quantity. Coupled with this growth in the ability to serve has been the growth in the population of the Dominion which fortunately has been mostly of English speaking immigrants, and it is in her capacity for absorbing greatly increased numbers that Canada probably will continue as the great home-making part of the Empire in the future.

In political growth, Canadian development has been somewhat of a mixture between the tendency in the United States and the experience of Great Britain. Canadians have had both of these great commonwealths to look to as examples. It is to be hoped that the mistakes as well as the successes of these Mother and Sister countries will be taken seriously into consideration so that the development that must come in the future will be both sensible and successful.

While we are enjoying the 56th Anniversary of our Canadian birthday and look forward to many years of prosperity, happiness and accomplishment, we extend a hand to Uncle Sam on the approach of July 4th, and say, "We wish you many happy returns of the day."

THE BRITISH EMPIRE EXHIBITION

There are two big events which will occur shortly in England in which Canada is vitally interested. The first is the British Empire Economic Conference to be held this Fall, and the second is the British Empire Exhibition to be held next summer. The former is pretty largely a Government affair but the representatives of the Government should be advised by the fullest possible information and co-operation from their home people, particularly those who have opportunity to do business with other parts of the Empire, either in buying or selling. Of course, the outstanding factor in this situation as it applies to the Pulp and Paper Industry is the present tariff relationship between Canada and Australia in which Canada is regarded as a foreign country and is hampered by a tariff which gives other parts of the Empire a distinct advantage amounting to as much as £3 per ton of newsprint paper and somewhat similar differential rates for other grades. That matter has been sufficiently brought out in recent numbers of this Magazine to require no further comment at the present time, but it is mentioned again as showing Canada's vital interest in the Economic Conference as it applies to the Pulp and Paper Industry and should emphasize the need for full co-operation and support from the Pulp and Paper Industry in strengthening as far as possible the hands of the representatives whom Canada will send to the conference.

The other event in which Canada and the Pulp and Paper Industry should take a very prominent part is the British Empire Exhibition which will be held at Wembley Park in northwest London from the middle of April until toward the end of October of next year. The idea of such an exhibition was suggested by Lord Strathcona back in 1913, but the intervening years have been so full of events that could not be postponed that the holding of the exhibition could not be carried out until after the matters connected with the war were pretty well cleared away. The plan, however, was by no means abandoned and within the last couple of years a very strong organization has been formed in England for carrying out the original idea and formulating definite plans.

The objects of this exhibition are well set forth in the following words issued from headquarters in London.

"The approaching Empire Exhibition will be in effect an Imperial stocktaking and vast window display. Those who doubt the Empire's potentialities and those who simply do not consider them will be confronted with a clear sight of what this great community of free nations can produce. More important still, the possibilities which our Imperial resources hold will for the first time be made plain. So much of our trade is placed abroad, not because the Empire cannot in large measure fulfil our own requirements, but because Britons do not know that they can buy them from Britons and it has not occurred to them to find it out. Now, British markets will be brought to them, raw materials to those who can make use of them, and manufactured goods to those who have not the facilities for making their own goods."

There is no part of the Empire so rich in natural resources as is the Dominion of Canada, and there is no part of Canada's vast industrial development which is in such a prominent position among manufacturers as is the Pulp and Paper Industry. Trade statistics show that there is a wide and varied market for Canadian papers in various parts of the Empire. It is true that our industry has not developed the possibilities of intra-empire trade to the extent that might have been done, and it is disappointing to learn that in some fields where a start was made this entry was not followed up vigorously with a campaign for extending the exports of Canadian pulp and paper and carrying them to other parts of the world as well.

The British Empire Exhibition will give the best opportunity that has ever yet been provided for a Canadian manufacturer to bring his goods and his ability to serve his customers to the attention of possible purchasers, not only throughout the length and breadth of the British Empire, but to the many other countries whose representatives will be among the millions in attendance at the exhibition.

The plain fact of the matter is that the Pulp and Paper Industry in Canada is too big a factor in the industrial development of the Empire to permit of its not being adequately represented at the show rooms of the Empire. The secretary of the Pulp and Paper Association with proper appreciation of his position and recognizing the importance of participation in this exhibition, is sending out a bulletin to all members, bringing the matter to their attention in a preliminary way. It is certainly to be hoped, and it may confidently be expected that the members of the industry will respond promptly and that they will each take a prominent part in co-operating with the executive to make the pulp an dpaper exhibit worthy of the grand prize of the exhibition. This applies to converters of paper as well as producers. The exhibits must be planned, collected and prepared for shipment before December 15th, and a lot of vigorous concentrated effort will be necessary in order to do full credit to the industry and to the opportunity which is here presented.

Nothing makes one as happy as his own honest belief that he has done his best.—Michael Pupin.

Let us hope the success of the Conservative Party in the Ontario election does not bring a return of the careless manner of handling the forests of that province that aroused such a fuss lately.

PULPWOOD EXPORT BILL PASSES

Reference was recently made on this page to the introduction by the Hon. W. S. Fielding, Minister of Finance, to the effect that the Governor-in-Council should be empowered to prohibit the export of pulpwood from Canada. On June 26th, the House of Commons at Ottawa defeated by a vote of 96 to 57 an amendment to give a six months' hoist to this bill, which was subsequently given a third reading. It may seem a little strange that the amendment was moved by a member of the Liberal party which is the Government party at the present time and under whose régime the resolution was first introduced, but there may have been reasons other than merely political consideration for opposing the resolution. In the course of the debate on the question, considerable reference was made to the items imported from the United States and the possibility of that country taking retaliatory action. That ground has all been pretty thoroughly combed over and the Government is quite thoroughly pledged to take measures that will keep, as much as possible of Canada's pulpwood in the Dominion for the use of domestic pulp and paper manufacturers.

There are still a large number of people in Canada who feel that persons who individually own tracts of pulpwood should have the privilege of marketing the growth from their land as they wish, and there is a possibility that the Government will see fit to so modify its action as to bring the minimum of hardship upon such people, while at the same time carrying out the spirit of the bill in order to prevent excessive export of pulpwood which occurs to the detriment of domestic industries, and to see to it that such export as does occur shall bring some revenue to the Government for the purpose of protecting the supply of timber for the use of Canadian manufacturers.

COBWEBS

Our hearty congratulations to Mr. C. Howard Smith on his election to the presidency of the Canadian Manufacturers Association. Mr. Smith was chairman of the Montreal Section and has always taken a keen interest in the welfare and work of the Association. He is president of the Howard Smith Paper Mills, Ltd., and a past president of the Canadian Pulp and Paper Association.

It will interest our readers to know that The Belgo Paper Company broke all records on June 15th, when the five newsprint machines made 301 tons of paper. No. 5, the 232" whale from Walmsley's, driven by the Harland Electric drive, was brought up to its rated speed of 750 ft. Its best day so far is 86 tons, but the Belgo bunch say they will have 90 before long.

Arthur D. Little, Inc. wants a copy of the "Pulp & Paper Magazine", for Nov. 17, 1922.

Trade Associations Foster Fair Dealing*

BY EDWARD BECK,

Secretary Canadian Pulp and Paper Association

One of the earliest trade associations of which we have any record was that formed by Mother Eve and the Serpent to pass on to the ultimate consumer a consignment of forbidden fruit, with dire results to the human race, while an early and outstanding example of the unbeliever who refuses to unite with his fellows is found in the case of Cain who voiced his non-concurrence in co-operative effort by demanding "Am I my brother's keeper?"

Mr. O. B. Towne, an American authority on trade organizations, traces the history of the modern trade association back to the tenth century and says that the movement had its inception in the desire of British and Continental traders to protect themselves against the pirates and robber barons who then a made a practice of preying on Commerce and industry. This is interesting in view of the modern tendency upon the part of the uninformed to regard the trade association as a lineal descendant of these same pirates and robber barons.

"In England," says Mr. Towne, "highway robbery and piracy on the high seas were so common, and so galling to those who sought a livelihood in commerce and industry, that organizations called merchants' guilds sprang up in many cities of the Kingdom. They protected not only the transportation of the goods, but also saved merchants, manufacturers and workmen from being kidnapped and forcibly held for ransom. During the turbulent times of the Norman Conquest the Merchants' Guilds were so effective that their fame spread from city to city and guilds sprang into being in all parts of the British Isles.

"In continental Europe the robber barons made life so uncertain for the merchant, and business success so well nigh impossible, that merchants organized as did the business men of England."

He goes on to state there were no restricting laws in those days and that the guilds regulated the quantity of goods to be manufactured, fixed prices, determined apprenticeships, and prescribed who should enter certain fields of business. On the Continent, the Hansa unions, as they were called, had even greater liberty and were not only permitted but were encouraged by the Government to fix prices, regulate the volume of product to be manufactured, monopolize the market and crush outside competition. And yet, it is asserted, quality was a chief objective of these associations. They made their own rules and disciplined members who violated them. Cheating and fraud were made punishable by expulsion. Later on, the historian records, the guilds became aggressive. They took undue advantage of their privileges. Restrictions followed. Their memberships dwindled and finally they suffered collapse. The Hanseatic League, on the Continent, went through a similar experience and met disaster in the end because it wandered off into the bypaths of politics and failed to stick to its legitimate purpose. Herein is a moral for the modern trade association which should eschew greed and unfair practices, stick to business and avoid politics if it would prosper and serve the best ends of its members.

There probably has never been a time since trade and commerce came into being that some form of trade association has not existed. They are usually born of necessity. No man, says an inspired writer, can live wholly unto himself. An exception is reported in the case of Ishmael of old, whose hand was against that of every man and against whom was the hand of every man. He was the prototype of those occasionally met with in the modern business world, who scorn co-operation.

"Some years ago, in a certain industry which may serve as a type, there were several mills located in various parts of this country," says Emmett Hay Naylor, another American authority in describing the genesis, objects and functions of a typical trade association of the modern type. "Each mill was in effect a little castle in itself where the owner was a feudal lord, ever on the lookout with a keen and suspicious eye for a possible enemy. His knights were his salesmen, whom he instructed to take business at any cost away from his arch enemies—his competitors. He counted it the best kind of business to capture his competitor's trade and customers. His creed was the survival of the strongest and he made a veritable fetich of open, cut-throat competition. To do less was to do nothing, he thought. He had perhaps never met any of his competitors; to him they were just unprincipled, scheming thieves, whom he had no desire to know or even to recognize, except as a force opposing his own progress. His competitors thought the same of him and of each other. In such a situation each was content if he made a fair living and felt reasonably independent. He congratulated himself secretly, and sometimes openly, upon being a keen, astute business man, skilled in the little tricks of the trade. Like his father, and other such men, he was noted for his business acumen.

"But a day came when he got into trouble. He ran short of raw material and he couldn't obtain it any price. With a contract that must be filled, his only way out was to borrow from his nearest competitor, who happened to have a reasonably good stock of raw material on hand, as he had ascertained by simple bribery. It was a bitter pill, but he swallowed it and went to his competitor. He told of his difficulties and was amazed to find his competitor half civilized, indeed, almost human. Before he knew it, he found himself smoking one of his competitor's cigars and was surprised to discover that they had problems in common. They discussed them rather guardedly, but at least with enough frankness to be understood. In the end, the manufacturer went away with the assurance from his competitor of enough raw material to enable him to meet his contract on time. He had a queer feeling. He had been compelled to break a precedent, a sacred principle; yet he had found his competitor not such a bad fellow after all. The manufacturer was perplexed. Either his competitor had been very kind in granting him the loan, or in so doing he was up to some trick.

"The ice had been broken, however, and after that he met his competitor more often. Then came a strike in the industry and about the same time the prospect of a tariff revision. This ended in all the competitors meeting for conference. There wasn't a man there who would believe any other man present under oath, but they were each and all in trouble and each hoped to find a way of helping himself.

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* Paper read at the meeting of the Montreal Stationers' Association.

"Through several meetings they worked together with much suspicion and some friction, but in the end the strike was satisfactorily settled and the tariff schedule remained as before. When the work was all over they thought it fitting to celebrate the happy ending with a dinner. By this time each of them had learned that the others were not half as bad as he had thought. A certain fellow-feeling had been awakened and the old uncompromising spirit of distrust and suspicion was somehow gone. Some of them actually felt a little friendly toward one another.

"It occurred to a few of these manufacturers that since co-operation in time of trouble had been of so much benefit, there might be other problems they could work out together. They decided to come together more often, if only for sociability. Later it seemed well to be a little more authoritative in their acts, to have a better defined organization: and so they chose a name, adopted by-laws, and lo, a trade association was born!

"At the outset the organization failed of the support of some of the competitors, but soon important matters came up that they decided to establish an office and employ a secretary. More frequent meetings were held, and the oftener they met the more they found there was to do. One of the first things they wanted to do was to discuss and, if possible, determine the prices at which they were to sell their commodities, but they had a hazy notion of certain restrictions imposed by law, and feared lest they might inadvertently render themselves liable to indictment. To make sure of that point they retained a lawyer, who advised them at all their meetings just what they could and what they could not legally do.

"Eventually their association worked around to the salient principle that if its members were properly informed regarding exact market conditions, there was little likelihood that any of them would make a serious mistake in the sale of his product. They recognized that the tendency to cut prices and sell below cost usually arose from ignorance of exact market conditions, and that frequently such ignorance could be attributed to information received from unreliable sources.

"In order that they might know as definitely as possible what the supply and demand of the market would be, they decided to have their secretary compile, at regular intervals, statistics that would show exactly how the market stood. The members severally agreed to furnish the secretary confidentially the information necessary to compose these reports. The Secretary was not to make public the private information received from members, but was to issue all statistics in summaries.

"In order that he might give correct information, it was found necessary for each member to know what it cost him to manufacture his product. At first a few of the members who had good cost systems showed some of their competitors the principles and proper practice of cost accounting; for they rightly assumed that a competitor who knows his costs is less to be feared than one who runs his business by rule-of-thumb methods. Gradually, the industry approached a reasonably uniform cost basis.

"We must not think, however, that all this work of establishing sources of information, a uniform cost system, etc., was accomplished in a few months. Much time was consumed and much talking and urging was required before certain members would consent to give the secretary the desired information. It was not until several years had passed that all the manufacturers of the industry were convinced that they should be members of the association, and not until considerably later that all were willing to furnish information, or to consider a uniform cost system.

"It is shown clearly in the record what this co-operation, by being correctly informed, has done for that particular industry in a year. For many industries it was a trying year and especially for the industry in question. But while orders and production fluctuated considerably throughout the year, prices remained uniform. Toward the latter part of the year, as the cost of raw material increased, prices advanced proportionately. This result was directly traceable to the association, since every member knew exactly, when he received his weekly report, that he was getting his share of business. The reports of prices obtaining in the raw material market were also carefully observed. Business was indeed poor, but each manufacturer knew that he was no worse off than his competitors. He did not fear, as he might have done previously, that some one else was getting his business away from him; therefore he had no inclination to send his salesmen out to sell his product at a lower figure. Prices did not decline.

"In this case there was no collusion, agreement, meeting of minds, or anything of the kind. Each manufacturer was simply informed as to the exact market conditions and used his own individual and independent judgment. The results as shown by statistics were that, where, under much less trying circumstances, the aggregate industry would probably have lost many hundreds of thousands of dollars through undercutting of prices and ruinous competition, the intelligent co-operation of these manufacturers had saved them between $5,000,000 and $6,000,000. No hard feelings had been engendered and both manufacturers and customers were well satisfied. A year that otherwise might have proved disastrous had ended with a fair degree of success, viewed from the standpoints of harmony, satisfaction and profits. Nor should it be forgotten that where prices are cut recklessly and where every man tries to undersell the other, the disastrous result is not merely temporary, since the industry required several years to recover from the effect of such conditions.

"The association whose experience has been narrated is now one of the many strong trade associations in the United States. Its members are doing many other things of a co-operative nature, such as working together on freight rates, insurance, credits, trade abuses, etc. One result of such co-operation is seen in the fact that not long ago, when a part of the industry was affected by a local strike situation, the competitors in that particular district got together and appointed one of their members whom they gave power of attorney, that he alone might represent them in this labor difficulty, which he did successfully.

"What has been been accomplished is further shown by a remark of one of these manufacturers. He said: 'I used to think that Smith was one of the meanest and most contemptible man that ever drew the breath of life, but since I have come to know him at our meetings and have visited him at his mill, I have found him to be one of the finest men whom I have ever had the honor to know.' Men who several years ago would not trust one another even in the smallest matter are now working together, and are not only making larger profits but are working more happily than they ever thought possible under former conditions."

No one of sense will deny the usefulness or the value of a legitimate trade association. There was a period, particularly in the United States, when there was a tendency upon the part of the public to regard all such associations as more or less evil. Special laws were enacted to restrict their activities. Commissions and boards were created to control and govern them. That era is now disappearing. In the States today there is a tendency to recognize and encourage the legitimacy of co-operative competition. This tendency recently found expression in a statement by Herbert Hoover, Secretary of Commerce. He says:

"The legitimately formed associations have contributed greatly to the improvement of business morals and practices, have cheapened our production and distribution processes, have improved working conditions; have, by the statistics they publish of production and distribution, enabled our whole commercial public to form safer judgments as to their future policies. They have contributed to the advancement of our foreign commerce and generally they have interested themselves in our economic welfare. Their services should be preserved and even better organized."

The New York Evening Post, too, which has also recently given considerable study to the question of trade associations sums up its conclusions by saying:

"It is only after we have understood the sound functions to be subserved by trade associations that we can guard against abuses by prohibitions and restrictions. Superficially, it may seem proper to prohibit any activity which tends to limit competition. But there is sound and unsound, healthy and unhealthy competition. A trade association which act to prevent such ruinous price slashing that weaker firms must go to the wall, acts not to restrain competition but to protect and preserve it. Business men who are not joined in a trade association often compete in ignorant self-interest, while those in the right kind of trade association compete in enlightened self-interest. That is, a manufacturer's eagerness to beat his rival by lower prices will not be lessened; but he will not be misled into flooding a market already full when he has an accurate knowledge of demand and stocks on hand."

In Canada public opinion has never been quite so rabid on the subject as it has in the States. till, even here, trade associations, in dealing with the subject of competition, must step warily lest they find themselves transgressing the law. We find, even at the current session of Parliament, new legislation being put through which is believed by some to be designed to hamper co-operative efforts in promoting trade. Singularly enough, while this is to be applied to manufacturing industries, we find the Government itself extending to the great grain-growing industry of the West encouragement and support in their efforts to form a wheat board which shall fix an arbitrary and uniform price for their products. Labor combinations, likewise, are exempt; only manufacturers and traders are to come within the scope of the new legislation.

I promised your president before I got through I would say a few words as to the scope and the activities of the Association with which I am directly connected and in which your own association has at least a fraternal interest since the stationery business is founded on that of the paper manufacturer. Our Association, now in its eleventh year, is regarded as one of the most flourishing in the Dominion. It owes much of its strength to the troubles it went through in the days of "Government control" during and subsequent to the war. The attacks to which they were then exposed forced the manufacturers into common defensive measures and taught them the value of co-operation. The aims of the Association are briefly stated. They are to make the pulp and paper industry predominant in Canada; to improve the quality of its products; to keep its personnel informed on all new developments, especially those likely to affect its markets; to collect and disseminate its members the vital statistics of the industry, having relation to production, shipments, stocks in reserve, imports and exports; to assist in meeting transportation problems; to watch legislation, and to carry on advertising

The association comprises several sections—Newsprint, Book and Writing, Felt, Board, Coated Paper, Wrapping Paper, Sulphite, Kraft, and Mechanical Pulp—each of which has its own chairman and functions separately.

The Association issues regularly weekly and monthly reports on production, shipments, etc., covering all the varieties of products which its members are engaged in producing. It maintains by cable an interchange of similar information with the Scandinavian Cellulose Association, whose headquarters are in Stockholm, and with the newsprint producers of Sweden, Norway, Finland and Germany, regular reports covering these countries being received and distributed.

The Association pays attention to the promotion of technical efficiency and maintains a Technical Section, composed of the principal technical men in the mills, to further that purpose. It has contributed $26,000 towards the expense of getting out a series of vocational textbooks to promote efficient workmanship in the mills. It is helping to maintain and carry on a correspondence course for mill operatives, based on these text-books, in which at present over 300 students are enrolled. It acts as a medium for finding summer employment in the mills for under-graduates of Canadian universities who intend ultimately to look to the industry as a means of livelihood and, during the past four years has placed upwards of 400 students in temporary positions in this way.

The Association also maintains a Woodlands Section, composed of the chief foresters and woodsmen of the companies. This Section meets twice a year or oftener to discuss forest problems. Just now it is engaged in trying to solve the problem of how best to salvage the large amount of pulpwood left dead or dying from attacks of the budworm and other wood-destroying insect pests.

The Association also maintains a Transportation Bureau, with a competent traffic man in charge, to assist members in meeting their shipping problems.

The functions of a legitimate trade association, it will be seen from the foregoing, are many. As chief of them I would place that of inspiring a feeling of goodwill and confidence among its members. It can and does demonstrate that men may be business rivals and still maintain towards one another a feeling of friendship and respect. Association in a trade organization broadens men and teaches them toleration and self-control. It inspires faith in their fellows. King David was clearly not a member of a trade association when he gave utterance to the sentiment that all men are liars. In a trade association we learn that men can and do tell the truth; that they can be relied upon; that they can and do play the game on the square; that they are willing to give and take, to be honest with their business associates, to apply the fundamental principle of the Golden Rule to their commercial conduct.

" In time of danger the savage separates himself from his fellows and fights alone, because he is a savage," says a writer, discussing "the Philosophy of the Trade Association."

"Discipline and organization are not obviously fundamental in time of peace. But in time of trouble, the two things most needed are discipline and organization. In them is safety. In time of commercial readjustment, protection for the individual is in the discipline which makes for rigid adherence to fair practice codes of honor and honesty. Confidence is not an easy thing to maintain in the face of changing conditions and turbulent business thinking. But rigid adherence to the principles of association which maintain justice to all, can steady the ship so that it will ride out the storm.

"No association ever went wrong and turned from the path of rectitude because of honest effort at justice in human relations. Just as truthfully may it be said that no questionable, or unethical practice ever developed in a trade association that did not have its origin and practical demonstration in the business methods of individual members. An aim of the trade association is to maintain codes of ethics and honor in business relations. Honesty is the best policy. It is also the best economy and, like truth, is a labor saving device.

"Organized business effort, in the scheme of economics and sociology, is therefore a means to the betterment of those conditions under which humanity labors for life and livelihood. Its function is the elimination of injustice, fraud, misrepresentation, greed, oppression, domination, untruthfulness and dishonesty in the economics of human relations and the substitution of justice, fairness, truth, and honesty in their stead. The means to this end is practical and operative business democracy."

BROMPTON ENTERTAINS CUSTOMERS

Brompton Pulp & Paper Co. directors met on Thursday in their regular monthly meting, the most important feature of which was the declaration of 4 per cent. dividend on the preferred stock, following a declaration of 2 per cent. in April and a similar declaration in May, making the total of 8 per cent. paid on arrears of 12 per cent. It is expected that the remainder of the arrears will be paid off and the dividend payment brought up to date during the summer. Managing Director Bothwell reports business as being very encouraging.

Directors of the company were hosts at the dinner that evening to eighteen of their western customers, one of whom comes from as far away as Dallas, Texas. These customers are envelope manufacturers, who have been in convention at Niagara Falls, and who left Thursday night to visit the Groveton plant of the Brompton Company. From the experience of a visitor to that plant, it is safe to say that Brompton's relations with these customers will not be impaired after the latter have met the men who are responsible for turning out paper at the Groveton mill.

Last week the Brompton Company, which controls the mills at Groveton and Claremont, N. H. entertained a group of operating officials of those plants at the East Angus and Bromptonville mills. In connection with this opportunity to see the operations and get acquainted with their Canadian confreres, a banquet at the St. George's Club in Sherbrooke was enjoyed

CHINESE PAPER MILL SHUT DOWN

The paper mill at Pei Sha Chow, Hupeh, was established under the auspices of the late Mr. Chang Chih-tung, Viceroy of Hupeh and Hunan of the late Tsing Dynasty and financed with public funds. Recently owing to lack of adequate financial support from the Hupeh provincial authorities, the mill has suspended work. Seeing that the continued suspension of the mill would cause financial losses to the Hupeh provincial Government, General Hsiao Yao-nan has decided to farm out the plant to private persons. A group of merchants represented by L. Yu-ching are negotiating with the Hupeh officials to rent the paper mill in order to turn it into a private concern.

GROWING DEMAND FOR KRAFT PAPERS IN INDIA

Trade Commissioner H. A. CHISHOLM in Commercial Intelligence Journal.

Calcutta, May 15, 1923 — Pape merchants in Bombay, Calcutta and Delhi report a growing demand for kraft and wrapping papers throughout the country. There are two distinct features to this demand—the Bombay cotton mill market and the general bazaar trade.

The Cotton Mill Trade

On the Bombay side there has in recent years been a rapid development in the Indian textile industry and the mills there are maintaining a large production of cotton piece goods. It is in connection with the wrapping of the finished webs of cloth that this market for kraft paper arises. There is nothing special in the quality or weight of papers used by the cotton mill trade, and requirements are easily filled from stocks normally carried by large paper merchants.

The Bazaar Trade

Until very recently a visitor to the average Indian foodstuffs bazaar would have seen the bazaar merchant squatting cross-legged among his little conical piles of flour, pulse, gram, etc., weighing out a few pounds of his wares on his ancient scales and wrapping up each purchase with bits of old paper and grass. To-day a visit to the same bazaar reveals the dealer squatting and weighing out bits of flour and pulse in the same old way, but now the small purchaser may receive his flour in brown paper bags much, as the Canadian housewife receives a few pounds of sugar or rice from her grocer. To be sure, not every bazaar merchant takes such pains for the convenience of his customers, but in many of the largest centres the brown paper bag has become almost an established custom. In this trade, only the cheaper grades of wrapping papers are employed. Cheapness is the first essential, as price is the sole consideration when the Indian bazaar merchant buys paper bags.

Increasing Imports

The volume of wrapping paper imported during the twelve months ending March, 1923, increased 50 per cent as compared with the previous twelve months to a total of 156,000 cwts.—an amount equal to that imported during the entire three-year period 1917-1920 and slightly in excess of the volume imported during the import boom year 1920-1921. A feature of last year's trade was the increase in imports of American wrapping paper. According to Indian official Customs returns, imports during the last three years have been as follows:—

	Twelve Months, April 1 to March 31		
	1920-21	1921-22	1922-23
Packing Paper from -	Cwts.	Cwts.	Cwts.
United Kingdom	49,915	66,144	58,927
Sweden	13,382	10,630	16,596
Norway	30,718	3,349	11,994
United States of America	33,695	3,369	23,203
other countries	27,027	24,965	45,280
Total	154,737	108,457	156,000

Technical Section Had a Fine Meeting

In point of view of attendance and interest, the Summer Meeting of the Technical Section held last week in Montreal and vicinity is one of the best that has yet been held. An even forty gathered at the Ritz-Carlton hotel in Montreal at 10 o'clock last Thursday morning, and got aboard the big auto busses and overflowed into an additional automobile for transport along the beautiful shores of the St. Lawrence River to Ste. Anne de Bellevue. At this historic spot, made famous by the "Canadian Boat Song" written by Thomas Moore whose temporary residence was seen by the visitors, and by the early location of one of the important Hudson Bay trading posts, the visitors found a good deal of present interest in passing through and viewing the attractive grounds and buildings of Macdonald College and in inspecting the beautifully located and finely equipped plant of the Industrial and Educational Publishing Company, publishers of the Pulp and Paper Magazine. The Company entertained the guests to luncheon at the Senneville Country Club. After the lunch had been carefully stowed away, Mr. J. J. Harpell, president of the Company welcomed the Technical Section as guests, and Mr. O. F. Bryant, chairman of the Technical Section expressed the appreciation of the members for the cordial reception and the hospitality shown them throughout the trip.

Mr. Bryant then introduced Mr. J. O. Ross of the Ross Engineering Corporation who gave a very complete and interesting description of the Briner Economizer and its use in connection with paper machine rooms.

Mr. Ross' excellent paper will be printed in an early issue of the magazine and this will be followed by the discussion that took place after the reading of the paper. A number of the members had questions to ask about the equipment and other points in connection with its operation and its effect on paper machine economy.

The program committee feels proud of that fact that promptly at 2:30, the time named in the program, the party was on board the Captain Jack at the wharf at Ste. Anne de Bellevue and proceeded down the Ottawa River into Lake St. Louis and across to Beauharnois where one of the plants of the Howard Smith Paper Mills Limited was inspected. The secretary of the Section claimed the honor and credit for the selection of the weather which apparently had been made for the occasion.

As indicated on the program, this is the first occasion on which the Technical Section has visited a mill manufacturing the highest grades of paper, and it was indeed a revelation to those who visited the Howard Smith Mills at Beauharnois to note the exceptional care which is taken at every phase of the process. It was also a bit of a shock to newsprint and other men who are accustomed to seeing practically all of the processes carried principally by mechanical means to see the enormous amount of hand labor which is necessary in producing the highest grades of paper. The inspection of the plant was in charge of Mr. David Crabtree, and he had an efficient corp of conductors ready to take the visitors around in small groups so that every operation could be carefully explained to those interested in knowing just what was going on. Mr. R. M. MacLean was in general charge of arrangements for visiting the plant, and one of his most successful contributions to the enjoyment of the trip was the provision for entertainment on board the boat. After two hours spent in the most enjoyable way going through the paper mill the guests were each presented with a beautifully gotten up box of ladies' stationery, and with a booklet describing in general the processes of fine paper making, and in particular the mills of the Howard Smith organization, located at Beauharnois and Crabtree Mills, Que., and Cornwall, Ontario. This booklet is one of the most artistically prepared pieces of printing that has been done in Canada in connection with any industrial enterprise.

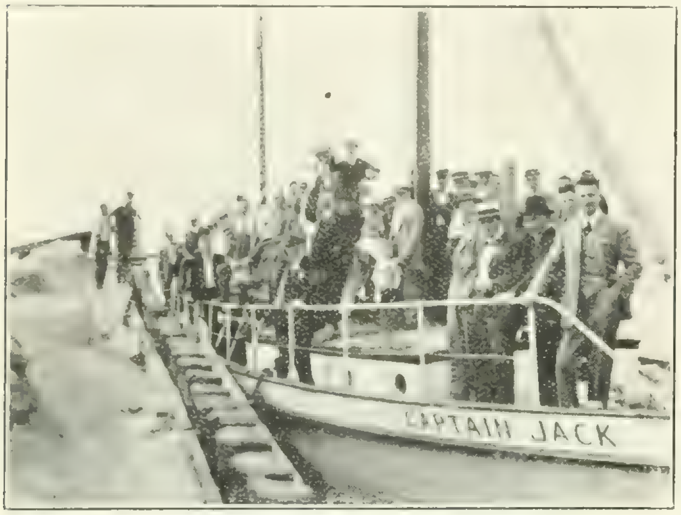
After a fine sail down Lake St. Louis, the party arrived at Lachine early in the evening and proceeded by motor busses to the Ritz-Carlton Hotel where a complimentary dinner was partaken of.

The Technical Section visits the Garden City Press

The Vice Regal Suite of the Ritz-Carlton Hotel witnessed a very happy party that evening and an excellent meal was heartily enjoyed. Besides the friendly conversation of those who were still talking over the interesting events of the day and the renewal of old acquaintances and the making of new ones, excellent musical entertainment was furnished by the committee and this was participated in by members of the Technical Section.

While the event was not a speech making affair there were some very good talks. The chairman, Mr. O. F. Bryant, referred in generous terms to the courtesies that had been extended by the Industrial and Educational Publishing Company and by the Howard Smith Paper Mills and indicated an enjoyable visit the following day to the extensive plant of the Dominion Engineering Works.

The first speaker called upon was Mr. George Carruthers, chairman of the Joint International Committees on textbooks, past chairman of the Technical Section, and vice-president of the Pulp and Paper Association. Mr. Carruthers is famous for his fund of stories, but the industry is by no means losing sight of his exceedingly valuable contribution to its welfare and progress through his intense interest and helpful work in connection with educational and other matters which are exceedingly vital to the welfare of the industry. Mr. Carruthers dealt particularly on the need for the development of something that will take the place of the old time apprenticeship system modernized to meet present conditions, something that will really provide a training for those who are going to be THE men of the industry. In expressing this view, he was ably supported by Mr. A. P. Costigane, secretary of the Ontario Pulp and Paper Makers' Safety Association, and the chairman of the apprenticeship committee of the Technical Section. Both Mr. Carruthers and Mr. Costigane have themselves served their apprenticeship and know how valuable it is for a young man to learn an industry in a systematic manner. The industry needs young men who have been trained in it from the ground up.



Leaving Beauharnois — All aboard

Mr. R. S. Kellogg, secretary of the Newsprint Service Bureau followed with an excellent talk which may be summarized as follows:

Only in the last fifty years has the world had enough paper, for only in that period has wood been generally recognized as its constituent, according to Mr. Kellogg, who emphasized the importance of the industry to the life of North America as a whole, pointing out that recognition of its worth was accorded during the war, when paper makers in the United States were exempt from military service.

Education was also dependent on paper, for without it books could not be made and the swift progress of education in recent years was largely due to the discovery of wood as a prime substance for the manufacture of paper.

The speaker drew a perturbing picture of vanishing forests when he compared the systems of wood replenishing adopted on the North American continent with those in Germany and the Scandinavian countries. The American system was rather a lack of system, for figures proved that the countries of Europe grew as many trees as they used, while such was far from being the case here. A million cords of wood was now annually used in North America for paper, and worse than this, 130 million cords had been consumed within the last half century.

"There is urgent need to set our house in order," said Mr. Kellogg, who said he began to smell the smoke of forest fires when he left New York and continued to have the odor in his nostrils here in Montreal. Either the fires must be controlled or prevented before their inception or the paper-making industry must die, was the form of ultimatum placed before the paper-makers by the American visitor.

The American visitors of the Technical Section were well represented by short speeches from Mr. B. Johnsen and Mr. H. W. French of the Hammermill Company and Mr. W. G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry. Mr. Johnsen made the plea that Technical men should impress more clearly upon the management the value of the technical service that they can render their organization and their industry. Mr. French spoke entertainingly of his first contact with Canadians in France, and of his growing respect and fondness for them.

On Friday morning the Section again assembled at the Ritz and were taken in motor busses and automobiles to the plant at Lachine of the Dominion Engineering Works, where they saw under construction the 230 in. paper machine for the Belgo Paper Company, and a 234 in. machine for the Backus-Brooks Paper Company at Kenora, Ontario. It was quite a novel sight for the Technical men to examine the huge as well as the small parts of these paper machines in process of manufacture, and to see the great care that has to be taken in the manufacture of even a so-called rough part of a paper machine. In the foundry, the men were just starting work on the core of one of the huge dryers, which are made six or eight inches longer than they will be in the finished state in order that the last traces of impurities may float to the top and be removed before the dryer is finished. After casting and cooling, these huge pieces of metal are given a roughing cut on the outside to bring them to a true cylinder and the dross is cut off the end and then they are placed in another machine where they turn on their own outside surface and are finished on the inside by giving them a comparatively smooth cut. This insures that all parts of the shell will be of uniform thickness and that all strains due to contraction of the surface are removed. The dryers are then given a finishing cut on the outside and are carefully polished and then covered with grease to keep them in perfect condition until they are shipped. These dryers are to be equipped with the so-called duoliptical dipper.

The Apprenticeship Committee held a serious meeting on the boat

In cutting the huge dryer gears, the pitch line of the gear is cut on its outside surface so that in adjusting the bearings of the machine, the pitch circles of gears that mesh together are brought into tangency. This insures perfectly smooth running of these gears. The castings for these dryers weigh in the neighborhood of 18,000 lbs. each.

One of the interesting sights that attracted the attention of the visitors was the huge suction couch roll, in which 13,755 lbs. of the highest grade bronze was used, and which was perforated with 130,000 holes. Each of these holes has to be burred both inside and out, and the roll has to be finished perfectly smooth both inside and out. The visitors were told that in the case of the suction press roll in the neighborhood of 500,000 holes were drilled in its shell.

The greatest care has to be taken with the castings used in paper machines and where a large number of pieces are to be made or the casting is required for a particularly critical spot, a sample is machined, tested and then broken to make sure that the alloy is perfect, and that the casting is accomplished without introducing any flaws.

The whole morning was occupied in this visit to the Dominion Engineering Works where vsitors saw not only the paper machine parts in process of construction, but they saw also some of the huge work which is being done on a lot of hydro-electric equipment that is now going through the shop. It was astonishing to learn that this one plant had in process of manufacture apparatus in which between 300,000 and 400,000 horse-power was represented, and that altogether something like a million horse-power is in process of development in Canada at the present time.

After a brief reception by the officials of the Company in the office the visitors departed as they had come, some going to an afternoon of sight seeing or shopping in Montreal and others to various golf links for an afternoon of recreation. It is doubtful whether the Section has had a summer meeting that has held so much of varied interest, instruction and enjoyment.

Those in attendance were:

Dr. Bay, E. Beck, Alex. Beique, O. F. Bryant, E. A. Charlton, George Claxton, A. B. Copping, A. P. Costigane, A. Papineau-Couture, George Carruthers, D. Crabtree, H. W. French, C. Nelson Gain, J. J. Harpell, T. J. Higgins, F. H. Hunt, E. D. Hyndman, A. Jacques, B. Johnsen, S. E. Kay, R. S. Kellogg, W. Kynoch, Wm. C. Lodge, R. M. Maclean, W. G. MacNaughton, M. W. Maxwell, W. D. Mosher, J. O.'Donoghue, Paul Panzl, D. E. Read, J. O. Ross, A. W. Sykes, G. H. Tomlinson, Geo. E. Williamson, E. B. Wardle, J. N. Stephenson.

HOW TO HANDLE COMPLAINTS

A suggestion from the Direct Mail Advertising Association produces a ready reference recipe. It's worth following because frequently one or more of the vital ingredients of the pleasing whole is overlooked or forgotten.

The results of experiments show that these six steps incorporated in the letter lend enchantment to correspondence which otherwise, frequently produces irritation.

1. Admit your error at once.
2. State action taken on complaint.
3. Make your explanation and express regrets briefly.
4. Embody a strong business-building thought.
5. Show sincere appreciation for the customer's letter.
6 .Strong indirect sales talk, for conclusion.

—The Crest

Sooner or later the selfish man is sure to wish that he had some standard other than his own enjoyment to look back upon.

ITEMS INSTITUTE

THE EFFECT OF FURFUROL IN MAKING PULP

Student Service Department Institute of Industrial and Domestic Arts.

Dear Sirs:

With regard to the effect of furfurol on pitch formation, as far as I know, it has never been proved that furfurol has any effect on the formation of pitch. As you know, furfurol originates with pentoses and pentosans of the wood and since the amount of this sugar is practically the same in balsam and spruce, there should be no difference in the amount of pitch formed with the two woods. Neither does the amount of petosans change with the storage of wood, while it is known that pitch troubles decrease with the amount of storing. The only change in the chemical composition of the wood which has been definitely proved takes place in the rosin and fat compound. I am not, of course, considering changes in chemical composition due to decay.

The furfurol is carried over the gas relief and is therefore found in the condensate, together with spruce turpentine, SO_2, and other compounds. Furfurol having high specific gravity will separate out at the bottom of the storage tank, while the spruce turpentine will separate out at the top. It is possible, of course, to introduce an abnormal amount of furfurol into the digester if the acid in the storage tank is allowed to go down to a very low level.

I hope you will be able to find something in this explanation which will assist your student.

Sincerely yours,

Chief Chemist.

LOSS OF HEAD DURING FLOW OF STOCK IN PIPES

Student Service Department.

Institute of Industrial & Domestic Arts

Dear Sirs:—Recently I have been attempting to carry out an experiment on the flow of pulp in pipes, and I wondered if you had ever happened to come across any data on the subject. We are measuring pressure drops along two pipes, one a 10″ groundwood line and the other an 8″ sulphite line, at different velocities. However, our apparatus is rather crude and we cannot hope for very close results. We would like to know the loss of head per 100′ of straight pipe and through elbows for sizes of pipe from 6″ to 14″, say, and for velocities ranging from about 5 to 15 or 20 ft. per sec., all for sulphite or groundwood pulp of a density somewhere around 3.5 per cent. If you have any of this information at hand or know where it could be obtained, will you be good enough to let me know? It would be of great value to us as a check on our work and a basis for the design of future pipe lines.

Yours truly,

PIPER.

A gentleman should respect himself when he is living alone, and should not begin to yield to slovenliness.

MAY EXPORTS WAY UP

According to a report issued by the Canadian Pulp and Paper Association the exports of pulp and paper in May were valued at $11,558,684 as compared with a total of $9,397,472 in the previous month.

The value of the various items exported was as under.

	May 1922		May 1923	
PAPER:	Cwts	Value	Cwts	Value
Newsprint	1,515,657	$5,361,102	1,978,016	$7,448,162
Book Paper	562	4,544	3,221	20,244
Other Papers & Mfrs.				541,122
		$5,779,669		$8,009,528
PULP:				
Sulphate	251,490	$763,505	233,771	$ 763,927
Sulphite Blchd	249,823	987,247	307,483	1,343,874
Sulphite Unblchd	225,537	594,580	326,670	912,919
Mechanical	325,119	397,829	330,399	528,438
	1,051,969	$2,743,161	1,198,323	$3,549,156

Exports were considerably greater than in May 1922. Newsprint increased by 462,359 cwts, bleached sulphite pulp by 57,660 cwts and the total value by $3,026,854.

The exports were distributed according to the following table:

	PAPER	PULP	TOTAL
U. S. A.	$7,638,802	$3,387,328	$11,026,130
U. Kingdom	131,792	27,630	159,422
All Other	238,934	134,198	373,132
	$8,009,528	$3,549,156	$11,558,684

Comparing the first two months of the current fiscal year with the corresponding two months of 1922 we have a big increase in the value of these exports for this year. For April and May 1923 the total value of the pulp and paper exports was $20,956,156 while for these two months in 1922 the total value was $15,013,189, so that this year shows an increase of nearly $6 million for the two months.

The details for the two months ending May 31st are as follows:

	Two Months 1922		Two Months 1923	
PAPER:	Cwts	Value	Cwts	Value
Newsprint	2,744,703	$9,733,063	3,545,577	$13,314,163
Book Paper	597	5,104	5,457	36,761
Other Paper & Mfrs.	—	733,565		1,104,814
		$10,471,732		$14,455,738
PULP:				
Sulphate	414,738	$1,275,120	425,870	$1,381,950
Sulphite Blchd	412,805	1,642,150	524,425	2,319,141
Sulphite Unblchd	391,883	1,047,144	634,397	1,758,771
Mechanical	454,076	577,043	650,233	1,040,556
	1,673,502	$4,541,457	2,234,925	$6,500,418

Our exports of pulpwood in these two months amounted to 187,967 cords, valued at $1,713,125 compared with 124,778 cords valued at $1,216,631 exported in the corresponding two months of 1922.

ONE DOES GIT CURIOUS

"I beg your pardon, sir, but what is your name?" the teller politely asked the man presenting a check.

"Name," echoed the indignant customer: "don't you see **my signature on the check?"**

"I do," answered the teller. "That's what aroused my curiosity."

EXPORT OF CANADIAN NEWSPRINT

A special report issued by the Canadian Pulp and Paper Association states that the exports of newsprint for the month of May amounted to 98,901 tons compared with 78,378 tons in the previous month. While this figure does not constitute a new record, it is the highest yet recorded with the exception of the month of March when the total exports were 113,450 tons.

Of the 98,901 tons exported in May, 98,531 tons was sent to the United States and only 370 tons to other countries, New Zealand taking 343 tons of this amount.

The first five months of this year have witnessed a large increase in our newsprint exports over the corresponding period of the last two years. The following table gives the figures for the present year, 1921 and 1922:

Five Months	Tons
1923	457,913
1922	370,861
1921	277,571

This year's figures show an increase over last year of 87,052 tons or 23 per cent. and over 1921 of 180,342 tons or 65 per cent.

Of the total exports in five months' period the quantities shipped to the United States were as follows:

Five Months	Tons
1923	446,713
1922	345,647
1921	252,794

Shipments to countries other than the United States were much smaller in proportion to the total this year than in either 1922 or 1921.

PAPER MILLS IN CHINA

A new paper mill, under the name of Kia Ho Paper Mill, organized by Cheng Wen-hai and other local merchants, has been registered by the Kashing Magistrate's office. The first shareholders' meeting was held on March 13, at which one quarter of the authorized capital, amounting to $32,000, was subscribed.

PAPER AND STATIONERY IN ENGLAND

In an interview with the Pulp and Paper Magazine, Mr. F. W. Field, H. M. Trade Commissioner said:

There has been little change in the paper trade since the last report.

The Swedish lock-out has now ended and no doubt prices of wood pulp will again become steady.

The exports of paper for the first three months of this year again show a notable improvement, the total export amounting to 1,021,839 cwts. compared with 404,051 cwts. in 1922 and 461,888 cwts. in 1921.

In the fourteen classified varieties enumerated under Paper and Cardboard in the monthly trade returns paper bags and roofing paper were the only descriptions of show a falling off. Concerning the markets to which printings were sent, it is eminently satisfactory to notice that 783,088 cwts. went to British possessions, while 103,434 cwts. were exported to foreign countries. Australia continues to occupy the premier position as a market for British printings, the quantity consigned to that Colony reaching 411,315 cwts. in the March quarter.

Colloid Chemical Problems In The Paper And Cellulose Industry[*]

By RUDOLF SIEBER

The paper industry includes the production of fibrous halfstuffs from plant material as well as the conversion of different fibers into the finished paper. To begin with, it is to be expected that, in an industry where the cellulose fiber composes the true half-stuff, problems in colloid chemistry will be encountered.

Even the raw materials, especially wood, are substances which consist almost entirely of organic colloids. The manufacture of pulp from wood consists essentially in removing the lignified substances. It is a fact that the composition of this, as yet very little known substance or substance-complex has been investigated for a long time. It may be mentioned that all investigations resting on a pure chemical basis have not given us any very definite results. Accordingly, Wislicenus has performed a very great service by being the first to apply colloid methods in investigating this substance. It is certain that more can be accomplished by these methods than by purely chemical methods. The solution of the problem should be of great importance in the manufacture of pulp, especially sulphite pulp, in which, at the present time, approximately one-half of the wood goes to waste in the spent liquor.

Although the rational production of useful substances from the spent liquor is not likely to occur, still there exists the possibility of utilizing the organic substances contained in it as a fuel. The separation of this (lignin) substance which is dissolved in a rather dilute solution partly in the crystalloidal and partly in the colloidal condition, entirely by evaporation is not by any means the best possible method. It would certainly be more advantageous to precipitate these substances by a coagulation process and then free them further from water. Application of the methods of colloid chemistry to the investigation of the composition of lignin and the behavior of its decomposition products in waste sulphite liquor might be used to advantage. The heat value of the organic substances in the waste liquor is about 7200 B. T. U. per pound.

Besides the sulphite process, there is the sulphate process in which, in contrast to the former, an alkaline solution is employed to cook the wood. Problems in this process are especially related to the volatile sulphur-containing compounds appearing in the recovery of the alkali. These compounds are of a mercaptan nature and on account of their odors make the neighborhood of such mills very disagreeable. Here it seems that colloid chemistry could be of material help. A process, recently developed by Schwalbe, has made it possible to absorb the bad smelling substances on suitable material and to oxidize them to odorless products. Practical experiments have already demonstrated the usefulness of the idea, consequently the prospects of this industry are very bright. Further study of this phenomenon should be of immense value from a practical and a theoretical standpoint.

Besides wood, other kinds of raw material are employed in the manufacture of pulp. A field, which would profit by the application of colloid chemistry, is that of converting textile fabrics to valuable paper fibres. At the present time most of our work is purely empirical. We boil rags with lime or other alkalies to remove the fat, dirt, color, etc. Whether the boiling processes now in use are really the most suitable for emulsifying these substances and removing them completely, at the same time without weakening the fibers, is very uncertain. All the more so when with the methods of treatment a very pronounced, but quite undesirable, absorption of salts occurs on the fibres, thereby resulting in manufacturing difficulties. Concerning the manner of and the conditions surrounding absorption, we are still very ignorant, and exhaustive research should prove very fruitful.

With the manufacture of half-stuffs to pulp and then to paper, the problems in colloid chemistry increase. This treatment is brought about in the beater. Besides the cutting action on the fibres, a physico-chemical change also occurs; the fibers are converted more or less completely, at the surface and often in the interior, into a hydrated condition, recognized by their slimy, mucilaginous nature. The beating under certain conditions can be carried to the point where the fibers are changed into a homogeneous mucilage, which behaves like a gel and represents a typical hydrosol. Most of the work on this subject has been concerned with the properties of pulp mucilage. Above all, exact knowledge is desired because the manufacture of different grades of paper rests on these processes and a better choice of half-stuffs for different papers would be made possible. It has been known for some time that well beaten fibers possess strong absorptive properties.

Although an investigation of the changes taking place in the beating of pulp with the aid of colloid chemistry is very necessary, there are still two other processes connected with the beater which lack explanations: the sizing and the loading of paper. By sizing is understood that process which gives to paper the property of being able to be written or printed upon. At present, sizing consists essentially in mixing rosin, completely or partly saponified, with the fibers in uniform suspension and then precipitating the rosin on the fibers with aluminum sulphate. This process, which is over one hundred years old and is of great importance to the paper industry especially on account of the possibility of obtaining a cheaper substitute for rosin, has not been clearly explained yet. Theories have been proposed by which the free rosin has been looked upon as the sizing material; others have held to the opposite view that the rosin is combined wth the aluminum hydroxide, forming the resinate, which sizes the paper. We have entirely overlooked the fact that cellulose fibers play a definite role here and, furthermore, that there is not merely a precipitation but the rosin is actually fixed on the fibers. Only recently have the principles of colloid chemistry been applied to this field. Progress in investigating the use of other sizing materials can not be expected until a more exact knowledge of rosin sizing is gained.

With the filling of paper we have the problem of correctly mixing such inorganic substances as minerals, clay, talc, gypsum, etc., with the paper stock and then maintaining certain conditions during the beating operation. This entire process has been a *terra incognita*—merely empirical rules. Given the fibers, in a suspension with clay, the problem is to fix the disperse phase on the fibres. Very little study has been carried out so that an investigation is bound to yield profitable results. We have no standard at present by which to judge the fitness of different clays and we take whatever is available. Only through the study of these problems can we progress, for a considerable quantity of paper is loaded and in general the losses are somewhat large.

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[*] Zellstoff und Papier, 3, 49-51 (Mar. 1923). Translated by John L. Parsons, Hammermill Paper Co., Erie, Pa.

These are some of the most essential, though by no means all, of the problems in the industry in a narrow sense. This domain also includes the manufacture of artificial silk, vulcanized fiber, cellulose films, parchment, etc. In all these branches, the methods of colloid chemistry at present play only a subbordinate role. It is indeed to be hoped that more importance be given to these methods in the investigation of future problems.

MONTREAL PAPER CLUB REVIVES

The Montreal Paper Club is to continue. This was decided at a luncheon held at the Queen's Hotel on June 26, under the presidency of Mr. R. M. McLean. The Club will hold the next meeting in September, when it will start with a clean slate. Moreover, judging by the expressions of opinion, there is every chance that it will be far more successful than in the past.

The chairman pointed out that there had been a lack of interest and suggested that a similar Club with a smaller membership might perhaps prove successful. It was far better to have a comparatively small number of interested members than a larger organization with a membership which was indifferent. What they wanted was members who were enthusiastic, not a lot of deadwood.

The discussion was taken part in by Messrs. E. T. Reynolds, A. L. Dawe, J. M. Hampshire, R. Hall, B. Brown, A. F. Waters, and E. Beck. The consensus of opinion was in favor of continuing the Club, it being pointed out that it had done good work in the past, despite the small attendance; that it had been the means of cultivating good fellowship; and that if it were continued with a small membership of the right type there was every reason to believe that it would become in time a strong organization.

Mr. Beck offered the Co-operation of the Canadian Pulp and Paper Association, and promised every assistance in the way of clerical work. He believed that there was no ground for being pessimistic in view of the past work, and that the Club could be of benefit to the paper trade generally.

The meeting unanimously agreed to carry on the Club, and promised their support. It was suggested that an occasional evening meeting might be held.

The following officers and committee for 1923-24 were elected President, Mr. A. L. Dawe (Canadian Export Paper Co., Ltd); vice-president, Mr. S. Rodier, (Rolland Paper Company, Ltd), executive Committee Messrs E. Beck (Canadian Pulp & Paper Association), J. Home, (Beveridge Supply Company Ltd) and E. T. Reynolds (McFarlane, Son, and Hodgson Ltd). At a subsequent meeting of the executive Mr. E. Beck was elected secretary-treasurer.

Mr. Dawe on taking the chair, remarked that they required the right type of men as members; those who would show some enthusiasm, and he felt assured that at the end of the next season they would have a Club which would represent a force in the paper trade.

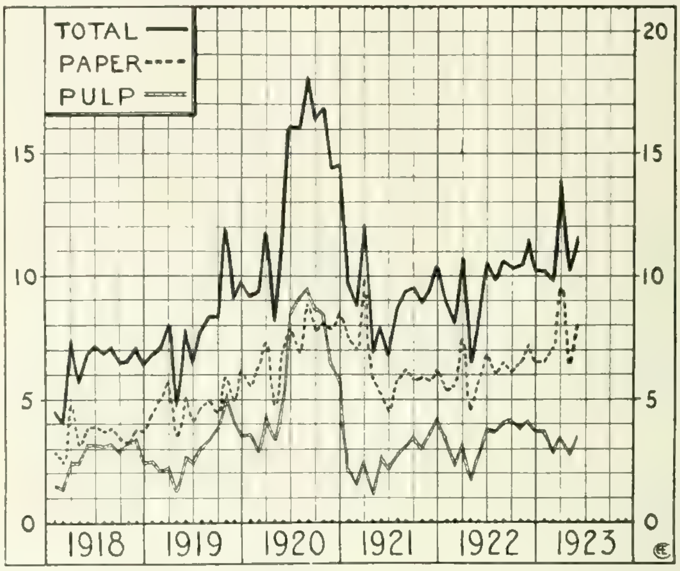
A vote of thanks was passed to the retiring officers and executive.

The more religion one has himself the more he is apt to discover it in others.

PULP AND PAPER EXPORTS IN MAY 1923

By A. E. Cadman, Canadian Pulp and Paper Association.

Exports of pulp and paper in May were valued at $11,558,684 which was an increase of $2,161,212 over the value in April. Increases over the previous month were shown in practically all grades of paper and pulp. Total paper exports were valued at $8,009,528 compared with $6,446,210 in April and total pulp exports at $3,549,156 compared with $2,951,262 in April.



The quantities and values of various grades exported during the first five months of 1923 and 1922 are shown under:

	Five Months 1922		Five Months 1923	
	Tons	Value	Tons	Value
Newsprint	370,861	$26,532,787	457,913	$34,418,896
Book (cwts)	1,913	16,852	18,704	121,395
Bond & Writing (cwts)	2,597	24,577	10,771	109,882
Kraft	5,717	892,807	8,282	1,261,096
Ground-wood	79,715	2,566,422	98,402	3,292,022
Sulphate	56,396	3,478,074	56,681	3,680,479
Sulphite Bleached	56,011	4,510,766	69,676	6,148,566
Sulphite Unbleached	55,847	3,002,132	82,447	4,434,387
Pulpwood (Cords)	386,299	3,866,188	534,618	4,758,575

NORWEGIAN MILLS CLOSED BY STRIKE

According to a cable received by the Canadian Pulp and Paper Association, the Norwegian pulp and paper mills have been closed owing to a dispute with the workers. The information is to the effect that the men walked out in sympathy with the log men and river workers, who have some grievance against the employers.

It appears that under an agreement between the men and the employers wages are to be adjusted according to the index numbers showing the cost of living. In March these figures showed a reduction of five per cent, and the employers took steps to lower the wages. This was not to the liking of the mill employees who have apparently taken advantage of some feeling caused by the action of the employers to strike in sympathy with the log men. The agreement as to wages terminates in August. The employers declare that if the men do not return to work a lock-out will be declared.

PULP AND PAPER NEWS

The interests of Mrs. Ritchie, wife of F. A. Ritchie, late President of Ritchie & Ramsay, coated paper manufacturers, have been acquired by George W. Pauline, Managing Director of the firm, and J. M. Finlay, Secretary-Treasurer. Mr. Pauline has been identified with the firm for the past eighteen years and Mr. Finlay for twenty-one years. The same policy which has characterized the company in the past will be pursued under the new arrangement and the same high grade variety of papers turned out. It is interesting to note that Ritchie & Ramsay were the first firm to start a coated paper plant in Canada. They have been in business for over thirty years. The plant is at New Toronto.

The Belleville Paper Mills, situated just north of the city of Belleville, Ont., suffered from fire on June 17. The chief and almost only loss was the burning of 300 bales of paper. It is thought that children playing with matches set fire to the paper which was piled against the mill. A bucket brigade saved the fire from spreading.

The firm of J. J. McFadden, Limited, of Spragge, Ont., has been accepted by the Ontario Government as contractors for the timber on Berth IE, in the Mississaua Forest Reserve. The district involved is 36 square miles in area, and the sale, while not unduly large, as timber limits go, is one of the biggest which the Lands Department has negotiated for some time. The McFadden Company has deposited a marked cheque for $25,000 along with its bid, and must remove the timber by April 30, 1929. The prices which the company has agreed to pay are: red and white pine, $8.50 per thousand feet; jack pine, $4.50 per thousand feet; other timber $3.50; cedar posts, 7 cents each: ties 20 cents each: spruce pulpwood, $1.55 per cord: other pulp wood, 90 cents per cord: cedar poles, 31 to 40 feet, $1: cedar poles, 40 to 50 feet, $1.50: cedar poles, over 50 feet, $2: Crown dues at the usual rates, in each case, are included.

The Strathcona Paper Company, Limited, Strathcona, Ont., manufacturers of box board, wrapping paper etc., report that the demand for sheathing paper is good and that there is also a good call for board. The company is running its machines full time and intends to install another boiler very shortly in order that more steam capacity may be secured with additional paper output. The company also intends to erect a good-sized stock room for raw material.

Machine tenders at the Port Arthur plant of the Provincial Paper Mills, Limited, hung up a new record on June 8 when they ran 118,625 pounds of pulp through the presses in an eight-hour shift. They checked in at 3 o'clock and completed the run at 11 p. m.

Lewis L. Alsted, of Appleton, Wis., has taken over the responsibility of carrying out the necessary work and has now all the right, title and interest in the Long Lake pulp and timber limit, which was awarded by the Ontario Department of Lands and Forests, in July, 1921, to J. H. Black, 36 Toronto Street, Toronto, and upon which before 1922, Mr. Black was to establish a pulp mill, situated at some point in the district of Thunder Bay and equip it. Mr. Alsted is the principal man behind the projected mill of the Great Lakes Pulp and Paper Co., at Port Arthur, Ont.

The Ontario Government awarded the Negagami River pulp and timber limit to the Transcontinental Development Company, Limited, 85 Bay Street, Toronto, on June 15, 1921. Afterwards the company's name was changed to that of the Transcontinental Paper Company. The original holders under the conditions of sale were required to begin construction of a pulp mill and carry out certain other regulations by October 3, 1921. It is now stated by the Department of Lands and Forests that, owing to the inability of the holders to locate a suitable water power on the limit, a further extension of time is being sought in the hope that negotiations may be inaugurated with the Hydro-Electric Commission that will result in a satisfactory solution of the power problem now apparently confronting the company and its development schemes.

I. H. Weldon, Toronto, President of the Provincial Paper Mills, Limited, sails on July 7, with Mrs. Weldon, for England, where it is proposed to take a motor tour through the British Isles. Incidentally, while in the Old Country, Mr. Weldon will look over the paper situation and he may also visit other paper producing countries.

A. R. McRae, at one time connected with the Victoria Paper and Twine Company, Limited, Toronto, and latterly with the Dominion Match Company, is now representing the Dominion Paper Company, Limited, Montreal. Mr. McRae's many friends were pleased to see him in Toronto a few days ago. Mr. Page, formerly with the Dominion Paper Co., is now representing the Continental Paper Products Co.

John Martin, of the John Martin Paper Company, Limited, Winnipeg, who is also connected with the Buntin Reid Company, Toronto, is spending a few days in the latter city.

The new mill of the Provincial Paper Mills, Limited, at Port Arthur, is now running at capacity and is now producing between 25 and 30 tons daily. Part of the western orders are now being filled from this plant, which means a considerable saving in freight rates. One machine has been installed and the building was constructed with a view to the adding of an additional machine when business warrants. President I. H. Weldon states that earnings were very satisfactory, for the first six months of the company's fiscal year. Provincial Paper Mills are now producing slightly better than 100 tons of paper, per day, which is the largest volume in the company's history. The new machine at Port Arthur has only been in operation for about three months, and has hardly had time to demonstrate its earning power, but with plenty of orders on hand the earnings for the past six months of the year should show an increase.

Mrs. C. H. L. Jones, wife of the General Manager of the Spanish River Pulp and Paper Mills Co., Limited, was seriously injured on Pim Street in Port Arthur when she was struck by an automobile. She was dragged along some distance and sustained severe bruises and other injuries.

E. J. Zavitz, head of the Forestry Branch of the Ontario Government, has ordered the Government's large seaplane to start on a survey of the districts in the north where forest fires are threatening. The plane will proceed north to Hearst and Cochrane. Thence it will turn towards the Quebec boundary and return south to Lake Temagami. The reports thus obtained are expected to be of valuable assistance in connection with the work of fire-fighting. In addition six smaller planes are patrolling the forest areas between Sudbury and the Great Lakes.

Latest reports received by the Matagami Pulp and Paper Company at their head office in Toronto from the Northern Ontario fire region state that so far their limits on the Matagami and Muskego Rivers had escaped the fire fiend although at one time they were in considerable danger.

George T. Mead, of Dayton, Ohio, President of the Spanish River Pulp and Paper Mills Company, Limited, together with P. B. Wilson and George R. Gray of Sault Ste. Marie, and C. E. Read of Ottawa, were in Toronto last week attending a meeting of the directors of the company.

"The Glue Pot" is out. It is published yearly by the members of the Canadian Paper Box Manufacturers' Association, and always coincident with the annual convention which is being held at Niagara Falls this year, the magazine is filled and brimming over with good wholesome humor and not a few practical ideas for the guidance of the box makers in their business and at the convention. There are also some clever drawings and pictures which aptly set off the letterpress. There is an article on "The Value of the Cost System," by Henry L. Stortz, of Philadelphia, and D. S. Porter of the Rudd Paper Box Company, Limited, Toronto, has combined wisdom and philosophy in his article dealng with "Everybody's Hour" at the convention. C. Winter Brown, of the D. F. Brown Paper Box and Paper Co., Limited, St. John, N. B. tells what is going on in the business in the Maritime Provinces and Bart Sproul, of Collet and Sproul, Toronto, and Art Allen, of Paper Sales, Limited, Toronto, each have interteresting departments. It is a bright little publication and shows how the paper box makers are competitors yet partners in the industry.

Owing to the extreme danger of forest fire conflagrations in central and southern New Brunswick, orders have been issued to the employees of the Nashwaak Pulp and Paper Company, who have engaged on pulp-peeling operations on forest lands, to desist from smoking while at work. This is the first time such precautions have been taken in this province.

Mr. Frank Hawkins, secretary of the Canadian Lumberman's Association has resigned owing to ill health, after seventeen years' service. He is succeeded by Mr. R. L. Sargent, manager of the Association's Transportation Department.

Mr. C. H. Mead, president of the Spanish River Pulp and Paper Mills, Ltd., and Mr. P. B. Wilson, vice-president, were in Montreal last week.

At a directors' meeting of the Canadian Lumbermen's Association held in Montreal last week, a resolution was passed in favor of the continuance of the manufacture and sale of oleomargarine. This is used largely in lumber camps. The executive of the Canadian Pulp and Paper Association recently passed a resolution supporting the Lumbermen's Association in their efforts to maintain the manufacture of this commodity.

Mr. Timberlake, the South African representative of John Dickinson and Co., London, England, is visiting Canada, and last week in company with Mr. W. Gorman, Montreal inspected the Mille Roches plant of the Provincial Paper Mills, Limited. Mr. Timberlake came to Canada after visiting Australia and New Zealand. He wll take a trip to the States and then return to Capetown via England.

Pulp and paper companies importing raw materials for re-manufacture are affected by the latest amendment to the Sales Tax Bill. This provides that on the importation of raw products the manufacturer on importing the raw material must pay the six per cent sales tax when the goods are taken out of bond. It is, however, provided that subsequently, when these raw materials are manufactured into a finished product and sold as such a claim may be made and realized for a refund of the six per cent sales tax collected on the raw material at the port of entry.

It is held that this will make the collection even more complicated than was at first proposed, and that it will tie up a considerable amount of capital and add to the overhead expenses, inasmuch as in some instances it is many months before the raw material is manufactured into the finished article.

According to the Hon. C. Marcil, the railway service in the Gaspe Peninsula is entirely inadequate, with the result that the lumber and pulpwood resources are not properly developed. He stated that the lumber industries in Gaspe and Bonaventure have been moved across the Baie des Chaleurs a distance of 25 to 50 miles, where the railway facilities to American and Canadian points are better. "We have pulpwood galore," asserted Mr. Marcil, "but no railway service," He asked for greater consideration in this matter.

Mr. J. Chenevert, Wayagamack sales manager has just returned from a very successful business trip through the Western Provinces and the United States.

The Wayagamack drive, probably the largest this year in the St. Maurice Valley is being seriously hindred in reaching its destination by the low water.

The North Shore Electric Power Co. of Three Rivers, have now nearly completed the extension of their street car service to the St. Lawrence Paper Mill. This will mean a great convenience to the company's employees and visitors, who hitherto have had a rather long walk to reach the plant.

HOWARD SMITH PAPER MILLS EXTENDING PLANT

The Howard Smith Paper Mills, Limited, have decided on an extensive addition and improvements at their Cornwall Ont. mill. Tenders have been called for the work, which includes a new finishing room 200 x 180 feet, three stories high; and a new machine shop 130 x 52 ft. It is also proposed to extend No. 3 and 4 machines, in order to double the capacity, and to install new water wheels in the No. 3 and 4 beater. room. Some additional beaters will be put in. The Company will in fact rearrange and extend the wet end of the mill. Besides this it is proposed later to install a soda pulp plant. The Company have just made some additions in connection with the unloading and conveying equipment. The machinery includes two five ton derricks operated by two 8 x 12 double drain hoists and a 75 h.p. vertical boiler for unloading rossed pulpwood from boats, which comes from the Gaspe limits of the company. A system of piling out and storage conveyors has been constructed at Cornwall. The complete equipment was furnished by the William Hamilton Co. Ltd., Peterborough.

Has anyone ever found in any non-religious writer a **complete** satisfaction, a final answer to questions, a perfect peace?

The Woodlands Section

WILL THERE BE A FAMINE IN PULPWOOD?

(From Our London Correspondent)

London May 28, 1923

The demands made on British, French, German, and Russian forests during the war between 1914 and 1918, are giving rise in these post war days to many startling statements in forestry circles. Forestry in the United Kingdom has not created such great interest as in Canada and it took the war to clear away whole forests and open the eyes of people to their importance. When war ended steps were taken in the direction of re-forestation, but the Geddes "Axe" of economy and the Government's appeal for economy —after 5 years of throwing and borrowing money right and left—curbed the good intentions and work of those engaged in re-forestation, and now we are told in cold print through the medium of the *Empire Forestry Journal* that the world's resources, particularly of soft timber, are being rapidly depleted.

Striking Statements

Mr. J. O. Boving contributes an article on Wood Pulp to the Journal—which can be obtained for a dollar from His Majesty's Stationery Office, in London, or through Canada's Commissioner for trade in London—and he estimates that more than 10,000,000 tons of pulp wood are annually converted into Pulp to the *Journal* — which can be obtained for a supplies on Sweden, Norway, and Finland, he states:

"Looking at the position with regard to the whole of Europe, it may be said that under normal conditions of trade the pulp produced is only sufficient to supply the home demand and if the consumption of paper should continue to increase at the same rate as during the last 20 years, there will soon be a very serious deficit."

Mr. Boving may be in a position to judge of things generally in the matter of forestry when he makes his startling statement, particularly when one takes into consideration the vast sums of money that have recently been spent on and invested in pulp and paper mills. He has also something to say about Canada.

Visible Exhaustion in Canada

"When we come to North America," he says, "the balance is even less favorable and the outlook decidedly darker. Broadly speaking, the United States rely today on Canada for their supply of pulp, and during the next decade their dependence on this source will become more evident. Most people have a vague idea that the pulp wood resources of Canada are inexhaustible. On the contrary, clear signs of approaching exhaustion are visible. So rapid and so ruthless has been the process of exploitation that incalculable damage has been done to enormous tracts of good forest which will take generations to recover and today the pulp wood has to be brought from far inland and at great expense.

"Already the stunted woods in the cold region to the north, between Lake Ontario and Hudson Bay, are being cut, woods that take about a century to reach even the small size suitable for pulping. Large pulp interests are actually considering the advisability of starting operations in districts where climatic conditions make it difficult for man to live. For the present pulp and paper are exported from Canada to Europe, but the time is rapidly approaching when not only will export overseas be impossible, but when even Canadian supplies will be insufficient to meet the increasing demand of the United States."

These statements are not very encouraging to mill owners, who want to interest capitalists in investments in the Dominion, on this side of the Atlantic.

Britain's Precarious Position

Mr. Boving mentions that Japan manufactures approximately 600,000 tons of paper a year and imports 150,000 tons—a demand which was practically nonexistent thirty years ago. South America, Australia, and New Zealand are dependent on imports; South Africa is devoid of first-class raw material for paper; India's coniferous forests are for the most part inaccessible, and China has no suitable wood. Judging from the phenomenal increase of paper consumption in Japan, Mr. Boving anticipates a greatly increased demand from China and India in the near future. In any event he regards Great Britain's position as precarious.

"Home supplies are entirely lacking", he says, "although the nation might have been almost self-supporting if a vigorous forest policy had been instituted in time and due regard paid to the needs of future generations. The climatic conditions are particularly favorable for growing conifers suitable for paper pulp, and, as everybody knows, there are hundreds of thousands of acres now practically waste which might be planted and earning revenue, thereby enriching the country and reducing imports.

"If we may assume that in say, five or ten years time the commercial conditions of the world will once more be nearly normal, it will then be found that the demand for paper has outstripped the supply and the prices will soar to such heights that we shall be face to face with real paper famine in this sense, at last, that prices being abnormally high, raw materials will be used which at present are either of too low a quality or out of reach commercially. A wise and far seeing policy energetically carried out now may save the Empire from the worst consequences of such a shortage.

FORESTRY ABSTRACTS

B-2 Results of Experiments in Reforestation. ELLWOOD WILSON, Laurentide Co. **Paper Ind.** iv, 1657-1659 (March 1923). Outline of the work which has been carried out by the Commission of Conservation of Canada (and later by the Dominion Forestry Branch) in co-operation with various Canadian pulp and paper mills since May 1917.—A.P.-C.

Technical Section

REVIEW OF RECENT LITERATURE

Paper Testing

A-14 Some Investigations with the Mullen Tester. Prof. W. HERZBERG. **Mitteilungen Des Materialprufungsamtes Zu Berlin-Dahlem** 5 (1922); **Woch. Papierfabr.** 54, 770-772 (Mar. 17, 1923); **Papierfabr.** 21, 180-182 (April 1, 1923). According to 24 tests made on two German newspapers there appeared to be no definite relationship between the Mullen values and the breaking length, per cent stretch, and folding endurance.—J.L.-P.

A-14 M-112 The Densometer. Paper Mill 47, No. 18 18 (May 5, 1923). The densometer is an instrument which measures the density of the material tested in terms of the number of seconds required for 100 cc. of air to pass through its pores or interstices under constant pressure. The test can be made in about one minute. The scope of its usefulness in paper making is briefly discussed.-A.P.-C.

A-14 Determination of the Fiber Content of Paper. E. O. REED and R. R. MACHMER. **Paper Trade J.** 76, No. 17, 47-49 (April 26, 1923). Results of co-operative microscopical analysis of papers submitted by the testing section of the Government Printing Office are tabulated. The results reported by most of the analysts are considered very close on the majority of the samples, indicating clearly that the fiber analysis of paper has been well developed and that by experienced analysts the three methods tried out (count, Spence and Kraus, estimation) give fairly concordant results. Results by the Government Printing Office testing section by the count method are very satisfactory on each sample and compare very favorably with those of the other analysts. The method is described in detail.-A.P.-C.

A-14 A Quick Test for the Determination of the Brittleness of Paper. PAUL. L. HOUSTON. **Paper Trade J.** 76, No. 15, 233-235 (Apr. 12, 1923). The author gives the results of Mullen tests on ten grades of paper after creasing (both single and double creases) in the machine, cross, and both directions, and gives the grading as to quality according to the results of these and of the other usual physical tests. The results of the bursting strength on creased paper and the results of the folding endurance test give the papers the same grading. He concludes that the bursting strength test of the creased paper determines a more reliable value of the strength, brittleness and wearing quality than the ordinary strength test without crease, and recommends that a study be made to determine the best size and weight of steel rolls to be used in the baby stack of calenders for creasing the paper and the optimum number of creases to be made.-A.P.-C.

A-14 The Effect of Atmospheric Humidity in the Physical Testing of Paper. PAUL L. HOUSTON, F. T. CARSON and R. S. KIRKWOOD. **Paper Trade J.** 76, No. 15, 237-251 (April. 12, 1923). The results of an extended investigation by the Bureau of Standards into the effect of humidity changes on the physical properties of paper are presented. Data and extracts from the literature are cited to indicate that the physical qualities are determined by relative humidity rather than by absolute humidity. The data are presented as graphs of the per cent variations from values at 65% relative humidity, since this condition is used almost universally in the paper industries. Eleven grades of paper were tested for nine physical properties at eight relative humidities varying from 15% to 83%. A description of the method of procedure for each test is given and is accompanied by a discussion of results. It is shown that folding endurance, elongation and tearing resistance increase considerably with relative humidity over the observed range; tensile breaking strength and bursting strength increase up to about 40% relative humidity and then decrease; the increase with humidity of moisture content, ream weight and thickness is relatively small and the per cent change of dimensions of the sheet is smaller still.-A.P.-C.

A-14 M-12 Green's Improved Standard Folding Tester. Paper Mill 47, No. 13, 10, 32, 34 (Mar. 31, 1923). A detailed description of the instrument with a discussion of its merits.-A.P.-C.

A-14 Effect of Length and Width of Tests Specimen on the Breaking Strength and Elongation of Paper. PAUL L. HOUSTON. **Paper Trade J.** 76, No. 12, 54-55 (Mar. 22, 1923). Results given show that the inclinable balance type of breaking strength machine gives varying results, because the swing of the pendulum is in itself a variable. However, for paper testing the variation in breaking strength is of the same order of magnitude as the experimental error and may for practical purposes be neglected. The question of length of test specimen is not important when only the breaking strength of the paper is desired. If the per cent elongation is desired, it is of the utmost importance that the length as well as the width be controlled and standardized. It is suggested that a length of 3.5 inches (approximately 90 mm.) and a width of 1 inch (approximately 25 mm.) be adopted as standard. -A.P.-C.

A-14 M-12 Relationship Between Breaking Strength and Bursting Strength of Paper. A. Possible Calibration of the Mullen Tester. PAUL L. HOUSTON. **Paper Trade J.** 76, No. 13, 47-48 (Mar. 29, 1923). The strengths of eight different grades of paper were tested with a 50 kilo breaking strength machine and with a Mullen tester with an attachment for measuring deflection (from which elongation could be calculated). The results show that for every grade the ratio of breaking strength to elongation is practically equal to the ratio of bursting strength to elongation. The author recommends that his results be checked by tests on a great number of different grades of paper; and if they are checked that the equation $\frac{\textbf{breaking strength}}{\textbf{elongation}} = \frac{\textbf{bursting strength}}{\textbf{elongation}}$ be used as a means of calibrating the complete Mullen tester and creating a standard bursting strength machine.-A.P.-C.

Raw Material

D-3 E-3 Use of Decayed Wood in Paper Making. OTTO SCHIERBECK. **Pulp & Paper** 21, 262-264 (Mar. 8, 1923). The author describes "pig rot," "feather rot," "hemlock rot," and "sapwood rot," which affect balsam, and rot caused by **Trametes pini** which attacks spruce, showing how they affect the paper making qualities of balsam and of spruce.-A.P.-C.

D-3 E-3 Decayed Wood in Paper Making. C. S. V. HAWKINGS. **Pulp & Paper** 21, 287-289 (Mar. 15, 1923). The author describes mill scale experiments carried out in January, 1922 comparing sound wood, wood containing 12% and 26% respectively of rot for the manufacture of news, sulphite, groundwood and newsprint. The results seem to indicate that 10% is a maximum figure for rotten wood if both groundwood and sulphite are supplied with wood from the same source. He then discusses the best means of making the most of the decayed wood (the proportion of which is continuously increasing in pulpwood) and suggests sorting from rotten wood and using the latter mostly for chemical pulp.-A.P.-C.

Sulphite Process

E-1 E-5 M-12 Recording and Integrating Steam Flowmeters in a Sulphite Mill. W. H. KRASKE. **Paper Trade J.** 76, No. 15, 162-164 (Apr. 12, 1923); **Paper Mill** 47, No. 15 66, 60, 74 (Apr. 14, 1923); **Paper** 31, No. 26, 51-55 (Apr. 18, 1923). The author gives flowmeter and pressure charts showing the usefulness of flowmeters in comparing steam pressure regulator versus hand control for cooking, high temperature versus low temperature, gradual "going up to pressure" versus the instantaneous method, running the digester "straight through" versus "shutting off" for a certain period, and the uselessness of preliminary steaming of the chips.-A.P.-C.

E-1 E-5 M-12 Help of Flowmeters in the Sulphite Cooking Process. HALVAR LUNDBERG. **Paper Trade J.** 76, No. 15 165-166 (Apr. 12, 1923); **Paper Ind.** 5, 106-108 (April 1923). A discussion of the advantages of using steam flowmeters in order to obtain uniform method of cooking and uniform quality of stock.-A.P.-C.

E-4 Sulphur Burner. H. D. WELLS. U. S. pat. 1,422,801, July 4, 1922; Can. pat. 228,631, Feb. 2, 1923. A pipe agitator, partly immersed in molten sulphur, rotates within a shell, the level of the molten sulphur being regulated by means of a suitable float valve. The sulphur-melting tank is in the upper portion of the shell. The combustion chamber is placed over the front end of the melting pot and is supplied with necessary air inlets and dampers, etc. In the combustion chamber are three baffles, the first and third being disk baffles and the middle a ring baffle.-A.P.-C.

E-4 Method of Burning Sulphur. H. S. DAVIS assignor to Texas Gulf Sulphur Co. Can. pat. 229,191, Feb. 27, 1923. Sulphur containing traces of oil and similar impurities (0.1 to 0.2%) is not free burning owing to their reacting with the sulphur to form asphaltic material which spreads over the surface and which, having a very high ignition temperature, extinguishes the flame. Certain materials such as asbestos, magnesia, and certain types of porous bricks ("Nonpareil" brick), and to a lesser extent magnesium carbonate, infusorial earth and fuller's earth, have a peculiar accelerating effect on the burning of sulphur and render impure sulphur free-burning. They may be used in all forms of burners, e.g., as a lining in rotary burners.-A.P.-C.

E-4 Gas and Liquor Relief Recovery. L. B. DECKER. Can. pat. 229,288, Mar. 6, 1923. Two (or more) digesters are connected in such a manner that the gas and liquor relieved from one may be conducted into the other at the bottom. All the digesters of the system are connected to an acid storage tank into which the gases given off may be conducted as desired. It is claimed this gives a greater yield of No. 1 pulp and that the quality of the stock is better and more uniform.-A.P.-C.

E-4 Sulphur Furnace. A. HANSEN. Can. pat. 228,807, Feb. 20, 1923. A ribbed rotating drum is partly immersed in molten sulphur in a suitable vessel, thus carrying the molten sulphur up into intimate contact with the combustion air. Combustion is completed in a combustion chamber as usual.-A.P.-C.

E-0 Highly Pressed Sulphite Cellulose. G. K. BERGMAN, E. ALMBERG and K. E. EKHOLM. **Pappers Och. Travarutidsk. Fur Finland. Paper** 31, No. 23, 9-12 (Mar. 28, 1923); No. 24, 9-11 (Apr. 4, 1923). Highly pressed sulphite imported from Finland into the United States was found to give trouble in breaking and bleaching. The authors investigated the properties of this class of pulps, comparing them with pulps prepared in the usual manner. From a strictly chemical standpoint (bleaching 5 hours at 40° C., with 10% of chlorine) there was practically no difference in the bleaching qualities. The variations in chemical composition were within the experimental error. Commercially, it was found that the highly pressed pulp was much more difficult to break up in the beater and more time was required to bleach it. Four out of five samples of highly pressed pulp were found to be slightly darker in color than the corresponding noncompressed pulps, and in the fifth case the colors were practically the same. There is practically no difference in color and strength between the two classes of pulp (strength tests are described in detail).-A.P.-C.

E-5 Filling Digesters with Hot Sulphite Liquor. H. CLEMM, assignor to **Zellstofffabrik Waldhof.** Can. Pat. 228,418, Jan. 30, 1923. The liquor is forced under pressure into the digester, which is closed by means of an excess pressure valve.-A.P.-C.

G-5 Centrifugal Pulp Thickener. R. C. MABRY. U.S. pat. 1,415,939, May. 16, 1922; Can. pat. 228,515, Feb. 6, 1923. The stock is fed into a rapidly rotating conical screen, the water being thrown out by centrifugal force and the thickened stock discharged at the bottom. A "Cleaning member" is provided for preventing the screen from becoming choked with the stock. It is claimed that stock can be thickened to a consistency of 10 to 18% and that the water removed is freer from fiber than by usual methods.-A.P.-C.

G — Pulp Treatment and Drying

G-10Bale Press. W. LINDEMANN. Fr. pat. 546,894, Sept. 5, 1922. **Papier** 25, 541-542 (Dec. 1922). The patent covers a portable press. The tracks on which the truck rests during the pressing stage are connected directly to the frame of the press, which does not have to be anchored to the ground. The box containing the bale before pressing can be removed after pressing without having to wait until the bale has been wired or otherwise fastened.-A.P.-C.

UNITED STATES NOTES

The Northern New York Division of the American Pulp and Paper Mill Superintendents' Association, at its annual meeting held last Thursday in the Hotel Woodstock, Watertown, N.Y., elected Homer E. Stafford, superintendent of the Kamargo Mills, Watertown, chairman of the division for the ensuing year. William J. Argy, superintendent of the Black River Mills of the St. Regis Paper Company, was re-elected secretary and treasurer. The program, which included business meetings, discussions and a banquet, was an interesting one and the meeting as a whole was most successful. Walter Rooney of the Albany Felt Company, spoke on "Paper Machine Felts," and following his talk he gave an illustrated lecture on the "Paper Industry in Japan." A paper on "Waste in Pulp and Paper Mills" by B. T. McBain of the Nekoosa-Edwards Paper Company, Ft. Edwards, Wis., was read by Secretary Argy in the absence of Mr. McBain who was unable to attend. Speakers at the banquet which was presided over by John H. O'Connell, were: Claude E. Nicely, president and general manager of the La Salle Paper Company of South Bend, Ind.; Ralph S. Baker, president of the Watertown Chamber of Commerce; H. Edmund Machold, speaker of the New York State Assembly, George W. Sisson of the Racquette River Paper Company, Mayor Robert E. Cahill and Captain Edward S. Lansing. The possibility of Canada's putting a tax on all wood shipped from Canada came under discussion at the meeting.

A 17,000 acre tract of hard wood, formerly owned by the Aldrich Paper Company in the Harrisville region of Northern New York has been purchased by J. L. Humes, a prominent Adirondack lumberman, head of the Pahud Lumber Company. The property was bought from the Aldrich Paper Company some months ago by the Oswegatchie Paper Company which was organized and incorporated last year by Samuel B. Wardwell and associates. The sale to Mr. Humes was made by the latter.

The paper industry has not suffered by the temporary setback in business, for the refusal of the manufacturers to allow a runaway price for their products has been a stabilizing factor throughout the industry, according to the monthly review of the American Paper and Pulp Association. As yet merchants have not stocked up to any large extent. Any rush of business from consumers will be reflected by orders to the mills and even new orders received specify immediate delivery. The mills had such an exceptional demand for many kinds of paper only very recently that their production was taken up for quite a long period ahead.

Nearly $8,000,000 has been paid by the United States Government to victims of the forest fires of October, 1918, according to figures given out last week by Duluth agents of the United States Railroad Administration. Vouchers for a total of $5,688,965.52 have been paid in 2,489 claims as a result of the fires that swept through Cloquet alone, and $2,138,430.79 has been paid on claims outside of Cloquet, or a total of $7,827,396.31. Only 95 claims have not yet been paid in the Cloquet district and 528 districts outside of Cloquet. The claims do not include those suits that have been filed in the district court against the United States Railroad Administration as the result of the refusal of the Government to settle.

The Carthage Sulphite Pulp and Paper Company announces that George E. Miller of Syracuse, a pioneer among Black River Valley paper makers, has been engaged to take charge of its sulphite department.

Since J. V. Baron became president of the Carthage Sulphite Pulp and Paper Company, a new line of specialties are being put out by the concern. These are high grade covers and press boards as well as stock for folders and colored tickets. Under the general supervision of P. H. Moran, general superintendent, the mills have been completely overhauled and the company will produce a very high grade of sulphite and boards in the future. The product of the sulphite mill will be handled by R. F. Hammond, Inc., New York City.

Imports of cardboard and wrapping paper, cigarette paper, writing and printing paper, including newsprint into Egypt during 1922, as reported to the Department of Commerce by Consul Lester Maynard, Alexandria, were valued at $2,700,000, as compared with $3,000,000 in 1921, and $2,000,000 in 1913. The share of the United States in these imports was insignificant, apparently owing to the impossibility of American manufacturers competing in price. Egypt annually uses about 500 tons of foreign-made cigarette paper.

J. J. Patricof, formerly president of the Waste Material Trading Corporation, New York, dealers in foreign and domestic rags, paper stock and wood pulp, is no longer connected with the company, according to an announcement issued from the offices of the concern.

Figures compiled by the New York State Conservation Commission from the reports of tree shipments from its nurseries during the spring planting season just closed show: 7,104,525 as the total number of trees shipped as compared with 3,687,360 a year ago; the total number of orders this year was 1,216 as against 567 a year ago. The Racquette River Paper Company, Adirondack Development Company and the St. Regis Paper Company planted larges numbers of trees sent them from the State's nurseries

Consul Leslie A. Davis, in a report to the Department of Commerce, states that the Finnish Woodpulp Mill. Union's production of mechanical pulp last year in the eighteen mills comprising the union, was 56,681 metric tons, air-dry weight, and that of woodpulp boards (cardboard) 33,242 tons, a total production of 89,923 tons. This figure, says Consul Davis' report, does not include about 90,000 tons of woodpulp used by the paper mills belonging to the same companies that compose the union, and which, in view of the increased production of paper last year, used more than in previous years. Sales of mechanical pulp by the Union to other mills in Finland last year amounted to 13,574 tons, or about the same as in 1920 and 1921, and exports reached 39,279 tons, leaving 3,828 tons on hand January 1, 1923.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 26. - Conditions in the local paper trade have not changed to any extent during the past week. It is a more or less spotty market; one week will be good, followed by another of intense dullness. Orders require a considerable amount of scratching. Moreover, customers are buying in a very cautious manner, they are not inclined to purchase in large quantities. This involves more work on the part of the salesmen and an increased overhead for the firms.

A house manufacturing a paper specialty has just put on a small campaign in Montreal. Several hundred possible users were circularized, the letters being followed up by calls. It was found that most of the people circularized were not using the paper, and although of course many refused to purchase, yet the amount of new business obtained justified the expense of the campaign. The chances are that a good percentage of those who are trying out the goods will become permanent customers.

Judging from the May imports, and exports, general trade is in a healthy condition. With one exception, all the main groups show increases in exports, forest products showing up well, with a gain of over $6,000,000 as compared with the corresponding month in 1922. This group ranks next to agricultural produce, and in May was within about $2,000,000 of that total. Had it not been for the gain in forest products, the exports would have been lower than in May last year. Our imports under this heading show an increase of just over $500,000.

The demand for newsprint is still very strong, the mills continuing to run at capacity. Advertising in the United States has always an influence on the newsprint situation and if we may judge from the large amount of space being used, there will be no let-up in the call for Canadian paper. For the first five months of the year advertising was 12 per cent greater than in the corresponding period in 1922, and about 1½ per cent more than in 1920, when advertising reached its peak.

The outstanding feature of the book paper department is the withdrawal of price lists by the mills. It is understood that for some time there has been little or no profit on this class of business, owing to the high cost of production. It is probable that the withdrawal is preliminary to an advance in prices. In the meantime, the mills state that some orders are desirable and others undesirable, and having regard to this, prices will be regulated by the mills according to the value of the orders. This decision does not come as a surprise, as the mills intimated that a readjustment would come into force sooner or later.

In the paper stock section, waste paper is inclined to harden, after having had a set-back. Rags are easier, owing to larger offerings due to the importation of European rags. There is a continued firm demand for roofing felts, the outlook being very promising on account of the activity in building.

The groundwood market is stiffening slightly, owing to a scarcity of the pulp. The water conditions are unfavourable to grinding, and consequently, the amount available is not so large. In bleached sulphite, the demand is still good, with prices ruling from $85 to $100 according to grade. Sulphite is a little firmer. The exports of all pulps in May showed a gain of about $800,000.

Toronto Market News

Features of the paper market in Ontario during the past week have been a twenty per cent increase in coated boards and advice to the jobbing trade from one of the big mills of a withdrawal of all prices. It would seem as if the latter action was not necessarily a forerunner of higher prices, although undoubtedly the trend is upwards. The same step was taken recently by one of the other big manufacturing companies and in both instances it was stated that the price list withdrawal was simply preliminary to a readjustment on some lines. The lines affected in the present instance are bonds, ledgers, writings etc., although it is not stated that there will be any change immediately in these classes of paper. One or two other lines might possibly undergo a slight increase but no statement is forthcoming from the company as to what the rearrangement of quotations is likely to mean. Ontario mills manufacturing coated board, notably the Georgetown Coated Paper Mills, and Ritchie & Ramsay, have advised the jobbing trade of a jump of twenty per cent on that product, which includes translucent board, and similar lines used largely for street car advertising, etc. The higher grade of filler, which is imported from the United States, has been going up in price lately, and raw material also has undergone price increases, which accounts for the advance imposed by the Ontario mills. Business generally in this department of papermaking is keeping up well. In most other lines business is suffering the effects of the usual summer dullness in trade circles generally. Particularly is this noticeable in the jobbing end of the paper business where a fair amount of paper is being handled but with the total absence of large orders that cheer the heart of the paper salesman. The holiday season is on now which means the absence from the office of the purchasing agents of paper-using firms and it is believed that the hot season will go hand in hand with a listlessness in paper selling. The printing trade remains rather quiet in Toronto, although other centres report fair business. There is a fair call for tissues and toilets and prices are holding firm while the wrapping and kraft paper manufacturers report a slackness in demand. The book and writing mills are all running full and publishers' envelope and catalogue manufacturers are sending in good-sized requisitions to the mills. Some departments of the converting trade are quiet, but for the most part the manufacturing stationers are enjoying fairly good business.

PULP—The market for all lines of pulp appears to be easing off considerably, largely owing to the slackening off in the higher grades across the line, although so far the decrease in the pulp business in Canada has not been pronounced as in the United States. As a matter of fact there is still a fair demand for most lines of pulp by the Ontario mills, and with lots of water which prevails now the pulp makers are turning out fair sized stocks most of which is being disposed of freely. Groundwood is quoted at from $34.00 to $40.00: bleached sulphite, $90.00 to $100.00: unbleached sulphite, $65.00 to $75.00 and news grade at around $65.00.

NEW YORK MARKETS

New York, June 23 —(Special Correspondence)—The paper market in New York has settled down in a manner quite characteristic of the summer season. There is a lack of important demand of broad scope; consumers are operating as buyers on a reserved scale, and while in the aggregate the movement of supplies from mills into jobbing and consuming channels is of fair volume, most individual transactions involve but small lots of paper. This is the time of the year when demand is confined almost entirely to goods immediately required by users, and printers, publishers and other large consumers of paper are not deviating from their customary course during the early summer and are placing orders only as their needs dictate.

It is true that some mills have curtailed operations. This has been due in part to a falling off of demand, and in part to manufacturers reducing production while compiling midyear inventories and making necessary repairs to mill machinery. On the whole, paper manufacturers are keeping comparatively busy for just this period of the year. Print paper mills are still running at close to full capacity; there is moderate activity among book paper mills; fine paper plants are operating on a fair scale, while coarse paper and board mills are producing at a rate fully up to normal for this season. Sentiment among manufacturers is very confident. Expectations are for a marked expansion of demand in the not distant future; most paper producers view the present lull in market activity as nothing more than to be looked for. Anticipations are that the second half of the year will prove equally as gratifyng as the first half; that the volume of business will be as large, if not larger, and that, if anything, more profit will be realized because of a better stabilization of raw material costs.

Newsprint consumption is holding up at a surprisingly high level. Publishers in New York City and throughout the country are using print paper at a rate probably never before maintained over such a long period as thus far this year, and present prospects are that there will be no let down in consumption during the summer. Just as much newsprint is being used at the moment as two or three months ago notwithstanding that demand for nearly every other kind of paper has decreased somewhat in recent weeks.

Prices of newsprint are firm to an extreme. The tone is strong, and spot shipments of standard news are freely commanding premiums. Buyers are meeting the prices asked without hesitancy, and the fact that leading manufacturers have announced there will be no advance during the remainder of the year has led to publishers contracting for forward supplies without reluctance.

Book papers also are enjoying an exceptionally good demand for the summer period. A majority of mills are contracted on the bulk of their output, and are readily disposing of most of their other output at firm prices, there being a good transient demand in company with a steady movement to contract customers. It is stated that trade magazines and fiction periodicals are well booked up on advertising over the next few months, which should result in sustaining demand for book paper. Moreover, the contracts mills have on file will absorb the greater part of their production for some time to come, so that continued activity will probably be noted in the book paper industry.

Demand for fine papers has subsided to some extent but mills are far from idle and are marketing their product at steady prices. If anything, manufacturers of fine paper are in a more favorable position today than they were a month ago. Perhaps they haven't as much business on their books but they are probably making a larger profit on the paper marketed since raw materials are being purchased at cheaper prices. Coarse papers are in spotty demand but prices show little or no change.

Box boards have held steady this week. Buying is of spasmodic character, consumers coming into evidence only when needing supplies yet manufacturers are maintaining quotations rather firm in the face of a decline in raw material. Most mills in the East are quoting $57.50 a ton f. o. b. New York on plain chip board and $60 on news board, though in some cases orders have been accepted down to $55 for both news and chip. In other words, when certain manufacturers are in want of orders they reduce their prices, and after booking all the business they want for a time they promptly mark up quotations again.

GROUND WOOD—Current demand for mechanical pulp is fair but is nothing out of the ordinary. Buying is principally against direct requirements, with consumers exhibiting no desire to anticipate their wants, so that most transactions involve comparatively small amounts of pulp. However, producers are not pressing matters and are maintaining quotations fairly well. The price commonly named by domestic grinders is $35 a ton f. o. b. pulp mills, and it is stated that the bulk of ground wood sold is bringing at least this figure although some sales at a little less have been noted. Grinders are working on a fairly active scale and evidently are producing more pulp than there is demand for, but, as is usually the case at this season, stocks are being accumulated for later in the year when droughts generally compel producers to reduce their output.

CHEMICAL PULP—A strike of operatives in the Norwegian pulp mills, resulting in the shutting down of all the plants in that country, is the outstanding development in chemical wood pulp. According to cable advices to New York pulp concerns, the workers in the pulp and paper mills of Norway have no grievances of their own but walked out on strike in sympathy with the strike of logmen or river workers, thereby obliging the mill owners to close down. It is understood that negotiations are on which will probably lead to a settlement of the trouble very shortly although there is the possibility that the labor disturbance may develop into a long-drawn-out affair similar to the strike in the Swedish pulp mills early this year. Should this happen to be so it would likely prove a boon to producers of bleached sulphite in the United States and Canada since the supply of this kind of pulp which paper manufacturers in America depend on from Norway would be cut off at least temporarily.

There is not much activity in chemical pulp at the moment. Papermakers are buying in hand-to-mouth volume only, and most of them are managing to get along with contract supplies in such a way as to preclude any necessity of purchasing in the open market. Quotations are fairly well maintained by both importers and domestic producers, yet proof is not wanting that sellers frequently are granting price concessions to secure orders. This makes for some irregularity in prices and naturally prompts buyers to look for pulp at reductions.

RAGS—The market for papermaking rags is decidedly quiet. There is some spasmodic buying being engaged in by consumers, but demand in the aggregate is far from important volume, and the price trend is still downward. Dealers put much stress on the decrease in collections, as well as in imports, since prices have worked down to low levels, and argue that any expansion of demand can only send prices higher almost instantly. On the other hand, it is admitted that some sizeable accumulations of both foreign and domestic rags are in the hands of dealers and that it will require quite a little buying on the part of mills to remove these stocks.

Roofing rags have sold down to one cent per pound f. o. b. New York for No. 2 packing of domestic origin, and it is said that foreign dark cottons have been bought by felt mills at as low as 1.25 cents a pound ex dock New York. No. 1 roofing stock is relatively firmer, dealers asking 1.25 cents for domestic packing at shipping points and at least 1.45 cents on the dock for foreign linsey garments. New cuttings are in slow demand and those buyers who are operating in the market are generally securing the rags desired at price concessions. Old white rags are quiet, and buying interest in blue rags has noticeably cooled. Sales of repacked thirds and blues at 2.50 cents per pound at dealer's shipping point have been reported, while miscellaneous blues have sold at 2 cents a pound and probably at less.

PAPER STOCK — It appears as if the decline in old paper values has been checked, temporarily at least. This has been brought about, however, more because of decrease in collections, due to the low prices obtaining, than to any improvement in demand from consuming sources. Dealers and packers evidently are receiving smaller supplies and therefore are enabled to hold out for firmer prices, and the changes that have occurred in market levels this week have been narrower than in any week in several months.

No. 1 mixed paper is selling at about 70 cents a hundred pounds f. o. b. New York, and folded newspapers at 80 cents. Probably buyers have bettered these figures in some cases, but dealers are growing stronger in their demands day by day and are mostly insisting on at least these rates. Shavings have sold at 3.25 cents a pound for No. 1 soft white New York, and 4.15 cents for No. 1 hard white shavings. Heavy magazines are bringing around 2.65 cents a pound at shipping points, and mixed books about 2.40 cents. Old kraft paper is steady at 2 cents per pound for strictly No. 1 packing, and manila papers are fetching previous prices.

OLD ROPE AND BAGGING—Paper manufacturers are buying old rope in a limited manner and seem to be getting the supplies wanted at their own prices. About 5.75 cents a pound at dealers' points is the market basis generally named on No. 1 domestic manila rope, with the foreign article selling at approximately the same price. Old bagging is quiet and irregular in price, quotations depending on their source and the

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quality of the bagging involved. No. 1 scrap burlap is available at 1.15 to 1.25 cents a pound f. o. b. New York, and bagging for roofing paper mills at 80 to 85 cents a hundred pounds New York.

A NEW PUMP

A catalog has been received No. Bulletin O-1 from the Frederick Iron & Steel Company, Frederick, Maryland. This publication describes the Frederick single suction, heavy duty, centrifugal pump which has been developed for use in pulp and paper mills. It is stated that efficiencies of 60 to 65 per cent are obtained under actual running conditions when handling pulp at a consistency of about 3 per cent, and that stock at consistencies of 4 to 4½ per cent can be handled by the pump with minimum power consumption. A diagram is shown illustrating the operating characteristics of an 8 inch pump running at 1000 r.p.m. for pulp at a consistency of 2 per cent.

LIST OF CHEMICALS

The National Research Council has just issued its second revision of the list of fine and research chemicals. This is their Bulletin No. 44 for which a price of 50 cents is asked. It may be had by addressing The National Research Council, 1701 Massachusetts Ave., Washington, D. C. After an interesting introduction giving reasons why research chemicals are so important, there is given a list of manufacturers and distributors of these materials, a list of research chemicals, a list of biological stains and indicators, a list of vital stains and a list of hydrogen iron indicators, all of which is very complete.

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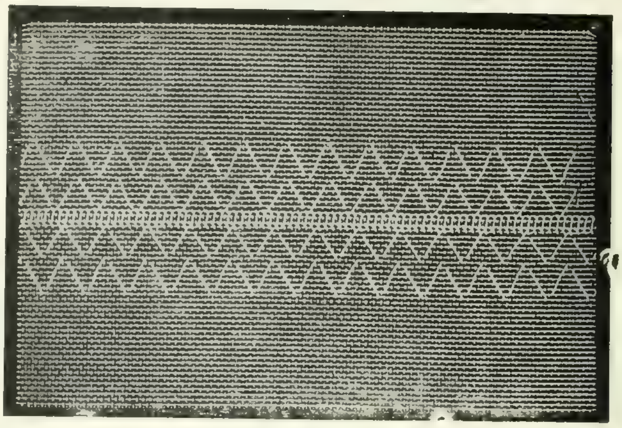

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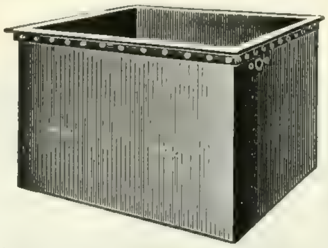

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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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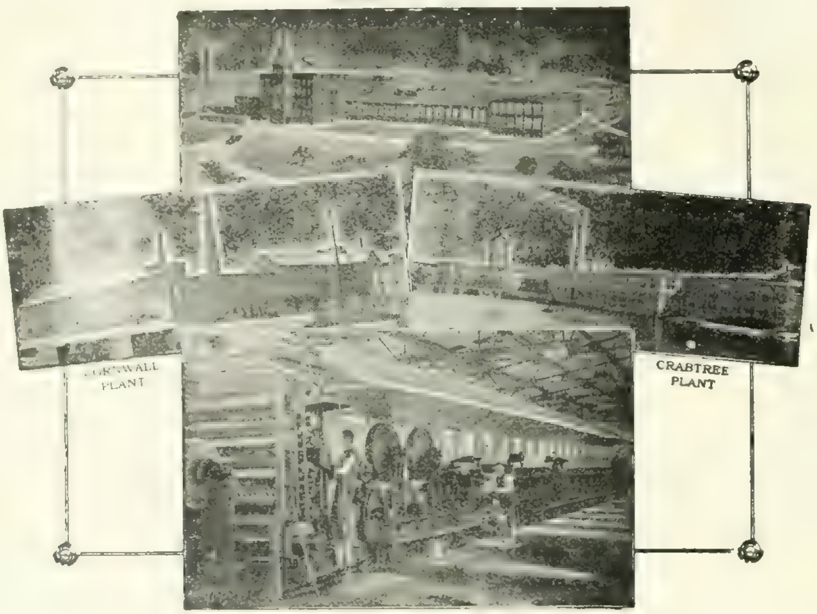

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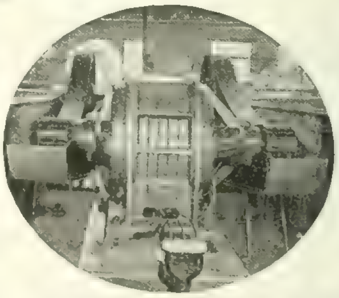

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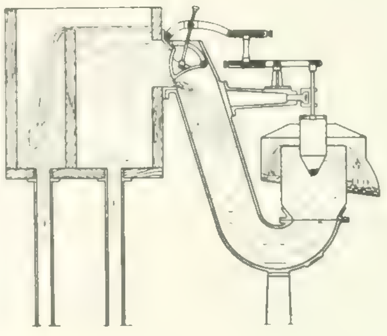

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Waterous Engine Works Co., Ltd.

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd

Power Factor Correcting Devices:
Griswold & Co
Power Condensers:
Griswold & Co

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co. Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works Co., Ltd.

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. ,Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
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Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
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Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co
McAvity T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Fairbanks-Morse Co. Ltd.

Pumps — Boiler Feed:
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Canadian Fairbanks-Morse Co., Ltd
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd

Pyrometers:
The Bristol Co.

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J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd

Rails: — Re-laying:
Canadian [illegible] Co., Ltd.
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Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
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Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Sherbrooke Machinery Co., Ltd
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Regulators — Steam:
Beveridge Supply Co., Ltd.
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Regulators:
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The Under Feed Stoker Co. of Canada Limited

Reverse Gears:
Canadian Fairbanks-Morse Co., Ltd
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd

Rods—Copper, Brass and Bronze:
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Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd

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Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd
Reed & Co., Ltd., Geo. W.

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Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd
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Stebbins Eng. & Mfg. Co

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Goldie & McCulloch Co., Ltd.

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Salt Cakes:
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Pulp and Paper Mill Accessories, Ltd
Port Arthur Shipbuilding Co., Ltd
Sherbrooke Machinery Co., Ltd
Waterous Engine Works, Co., Ltd

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Port Arthur Shipbuilding Co., Ltd.

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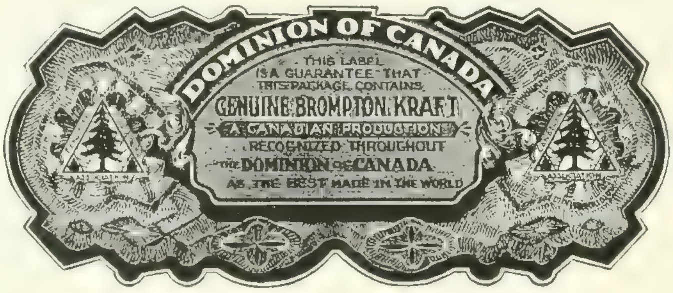
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Port Arthur Shipbuilding Co., Ltd.
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Peacock Bros., Ltd.

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Dominion Engineering Works Ltd.
Northern Foundry & Machine Co. Ltd.
Waterous Engine Works, Co., Ltd.

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Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
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Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

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- Hamilton Co., Ltd., Wm.
- Port Arthur Shipbuilding Co., Ltd.
- Renold of Canada, Ltd., Hans.
- Waterous Engine Works, Co., Ltd.

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- Canadian Fairbanks Morse Co., Ltd.
- Crane Co., Ltd.
- Goldie & McCulloch Co., Ltd.
- Sturtevant, B. F. Co. of Canada, Ltd.

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- Canadian Fairbanks-Morse Co., Ltd
- Dominion Engineering Works, Ltd.

Trolleys:
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- Canadian Fairbnks-Morse Co., Ltd.
- Dominion Engineering Works, Ltd.
- Northern Crane Works, Ltd.
- Waterous Engine Works Co., Ltd

Troughs:
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Trucks:
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- Canada Fairbanks-Morse Co., Ltd.
- Northern Crane Works, Ltd.

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- McAvity & Sons, Ltd., T

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- Northern Foundry Machine Co., Ltd.
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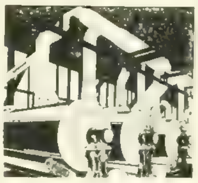

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